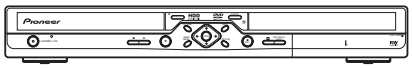
Pioneer sound.vision.soul

Service Manual



DVR-533H-S

ORDER NO.
RRV3173

DVD RECORDER

DVR-533H-S
DVR-633H-S
DVR-531H-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please confirm 3rd & 4th alphabetical letters.
DVR-533H-S	KUXV	AC120V	1	&&DL######$$
DVR-533H-S	KCXV	AC120V	1	&&DL######$$
DVR-633H-S	KUXV/CA	AC120V	1	&&DL######$$
DVR-531H-S	KUXV/CA	AC120V	1	&&DL######$$
DVR-531H-S	KCXV	AC120V	1	&&DL######$$

- **When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.**

An HDD (Hard Disc Drive) is mounted in this product.
The HDD is a precision instrument very vulnerable to shock and electrostatic charges. Please read "7.3 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

For details, refer to "Important Check Points for Good Servicing" .

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PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

T-ZZV JUNE 2005 printed in Japan

SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

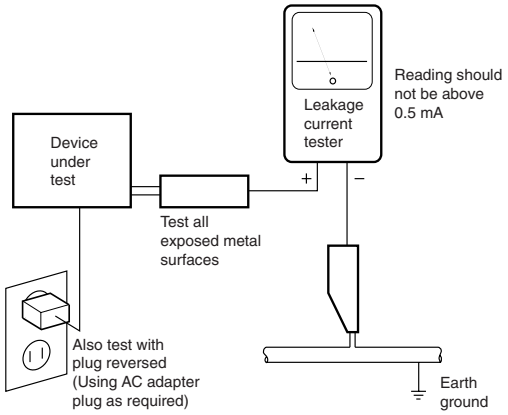
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

■ LABEL CHECK

IMPORTANT

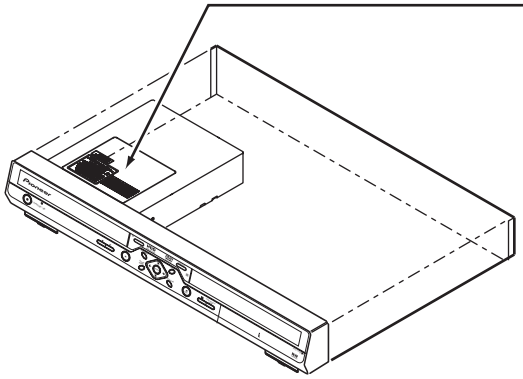
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

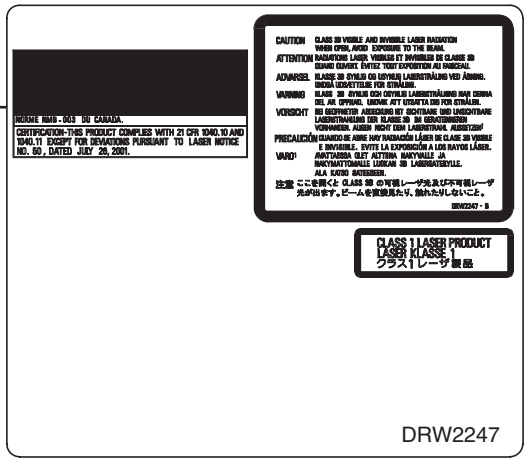
LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 100 mW
WAVELENGTH: 654 - 662 nm

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mW
WAVELENGTH: 770 - 810 nm





Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

1. SPECIFICATIONS

General

System . . . . . HDD, DVD-Video, DVD-R/RW, Video-CD, CD, CD-R/RW (WMA, MP3, JPEG, CD-DA)
Power requirements . . . . . 120 V, 60 Hz
Power consumption
DVR-531H-S . . . . . .43 W
DVR-532H-S . . . . . .43 W
DVR-533H-S . . . . . .43 W
DVR-633H-S . . . . . .46 W
Power consumption in standby mode 0.42 W (Front panel display: off)
Weight . . . . . 3.9 kg (8 lb 6 oz)
Dimensions . . . . . .420 (W) x 59 (H) x 273 (D) mm (16 9/16 (W) x 2 3/8 (H) x 10 3/4 (D) in.)
Operating temperature . . . . . +5°C to +35°C (+41°F to +95°F)
Operating humidity . . . . . 5% to 85% (no condensation)
TV format . . . . . NTSC

Recording
Recording format . . . . . DVD Video Recording DVD-VIDEO

Recordable discs
DVD-RW (DVD Re-recordable disc)
DVD-R (DVD Recordable disc)

Video recording format
Sampling frequency 13.5MHz
Compression format . . . . . .MPEG
Audio recording format
Sampling frequency 48kHz
Compression format . . . . . Dolby Digital or Linear PCM (uncompressed)

Recording time

HDD (160GB)
XP+ . . . . . Approx. 23 hours
Fine (XP) . . . . . Approx. 34 hours
Standard Play (SP) . . . . . Approx. 68 hours
Long Play (LP) . . . . . Approx. 136 hours
Extended Play (EP) . . . . . Approx. 204 hours
Super Long Play (SLP) . . . . . Approx. 272 hours
Super Extended Play (SEP) . . . . . Approx. 340 hours
Manual Mode (MN). . . . . Approx. 23–455 hours

HDD (80GB)
XP+ . . . . . Approx. 11 hours
Fine (XP) . . . . . Approx. 17 hours
Standard Play (SP) . . . . . Approx. 34 hours
Long Play (LP) . . . . . Approx. 68 hours
Extended Play (EP) . . . . . Approx. 102 hours
Super Long Play (SLP) . . . . . .Approx. 136 hours
Super Extended Play (SEP) . . . . . .Approx. 170 hours
Manual Mode (MN) . . . . . .Approx. 17–227 hours

DVD-R/DVD-RW
Fine (XP) . . . . . .Approx. 1 hour
Standard Play (SP) . . . . . Approx. 2 hours
Long Play (LP). . . . . Approx. 4 hours
Extended Play (EP) . . . . . .Approx. 6 hours
Super Long Play (SLP) . . . . . Approx. 8 hours
Super Extended Play (SEP) . . . . . Approx. 10 hours
Manual Mode (MN) . . . . . Approx. 1–13 hours

Tuner

Receivable channels
VHF. 2–13ch
UHF 14–69ch
CATV. C1–C125ch

Timer

Programs . . . . . .1 month/32 programs
Clock . . . . . Quartz lock (12-hour digital display)
Power off memory . . . . . .Approx. 5 years (after manufacture)

Input/Output

VHF/UHF antenna input/output terminal . . . . . .VHF/UHF set 75Ω (F-shape connector)
Video input . . . . . .Input 1,3 (rear), 2 (front)
Input level . . . . . .1 Vp-p (75Ω)
Jacks . . . . . RCA jack
Video output . . . . . Output 1,2
Output level . . . . . 1 Vp-p (75Ω)
Jacks . . . . . RCA jack
S-Video input . . . . . Input 1, 3 (rear), 2 (front)
Y (luminance) - Input level . . . . . 1 Vp-p (75Ω)
C (color) - Input level . . . . . .300 mVp-p (75Ω)
Jacks . . . . . 4 pin mini DIN
S-Video output . . . . . Output 1,2
Y (luminance) - Output level . . . . . .1 Vp-p (75Ω)
C (color) - Output level . . . . . 300 mVp-p (75Ω)
Jacks . . . . . 4 pin mini DIN
Component video output
Output level . . . . . .Y: 1.0 Vp-p (75Ω)
P_B, P_R: 0.7 Vp-p (75Ω)
Jacks . . . . . RCA jacks
Audio input . . . . . .Input 1, 3 (rear), 2 (front) L/R
Input level
During audio input . . . . . 2V rms (Input impedance: more than 22 kΩ)
Jacks . . . . . RCA jacks
Audio output . . . . . Output 1,2 L/R
During audio output . . . . . .2V rms (Output impedance: less than 1.5 kΩ)
Jacks . . . . . RCA jacks
Control input . . . . . Mini jack
DV input . . . . . .4 pin (front) (DVR-633/533H-S only) (i.LINK/IEEE 1394 standard)
G-LINK™ . . . . . Mini jack

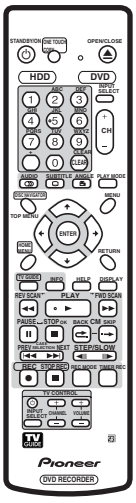
Supplied accessories

Remote control 1
Dry cell batteries (AA/R6P) 2
Audio / Video cable (red/white/yellow) 1
G-LINK™ cable 1
RF antenna cable 1
Power cable 1
Blank DVD-RW disc 1
Quick Start Guide
Operating Instructions
Warranty card 1

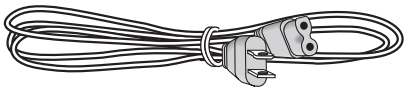
Note: The specifications and design of this product are subject to change without notice, due to improvement.

● Accessories

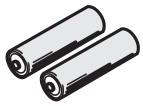
• Remote control ×1
(VXX2967)



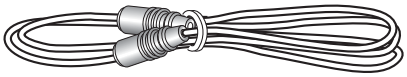
• Power cable ×1
(ADG7075)



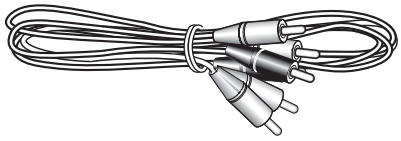
• Dry cell batteries ×2
(AA/R6P)



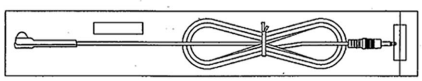
• RF antenna cable(PAL) ×1
(VDE1088)



• Audio / Video cable(1.5m) ×1
(red/white/yellow)
(VDE1077)



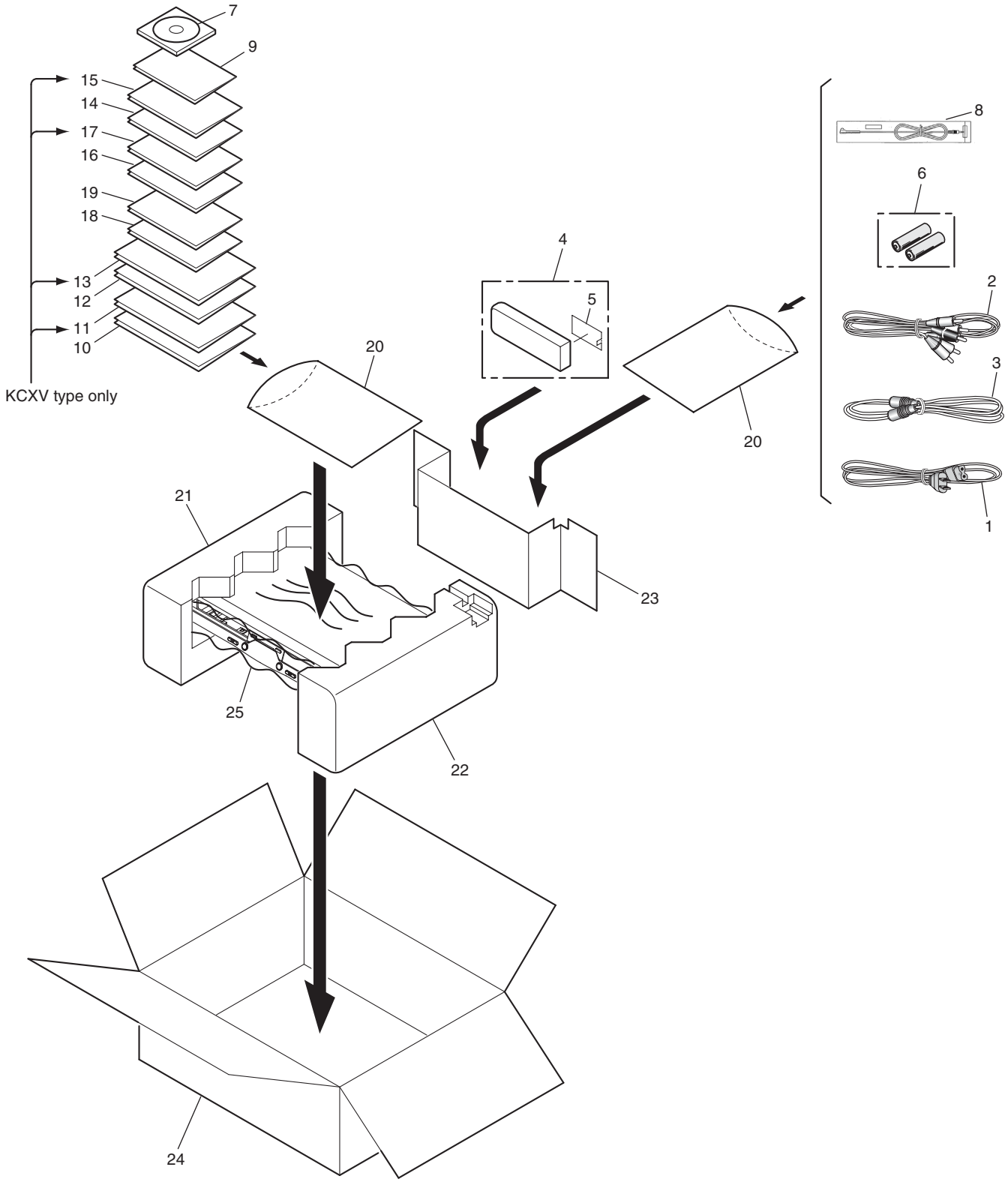
• IR Blaster ×1
(VDX1010)



2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



(1) PACKING SECTION PARTS LIST

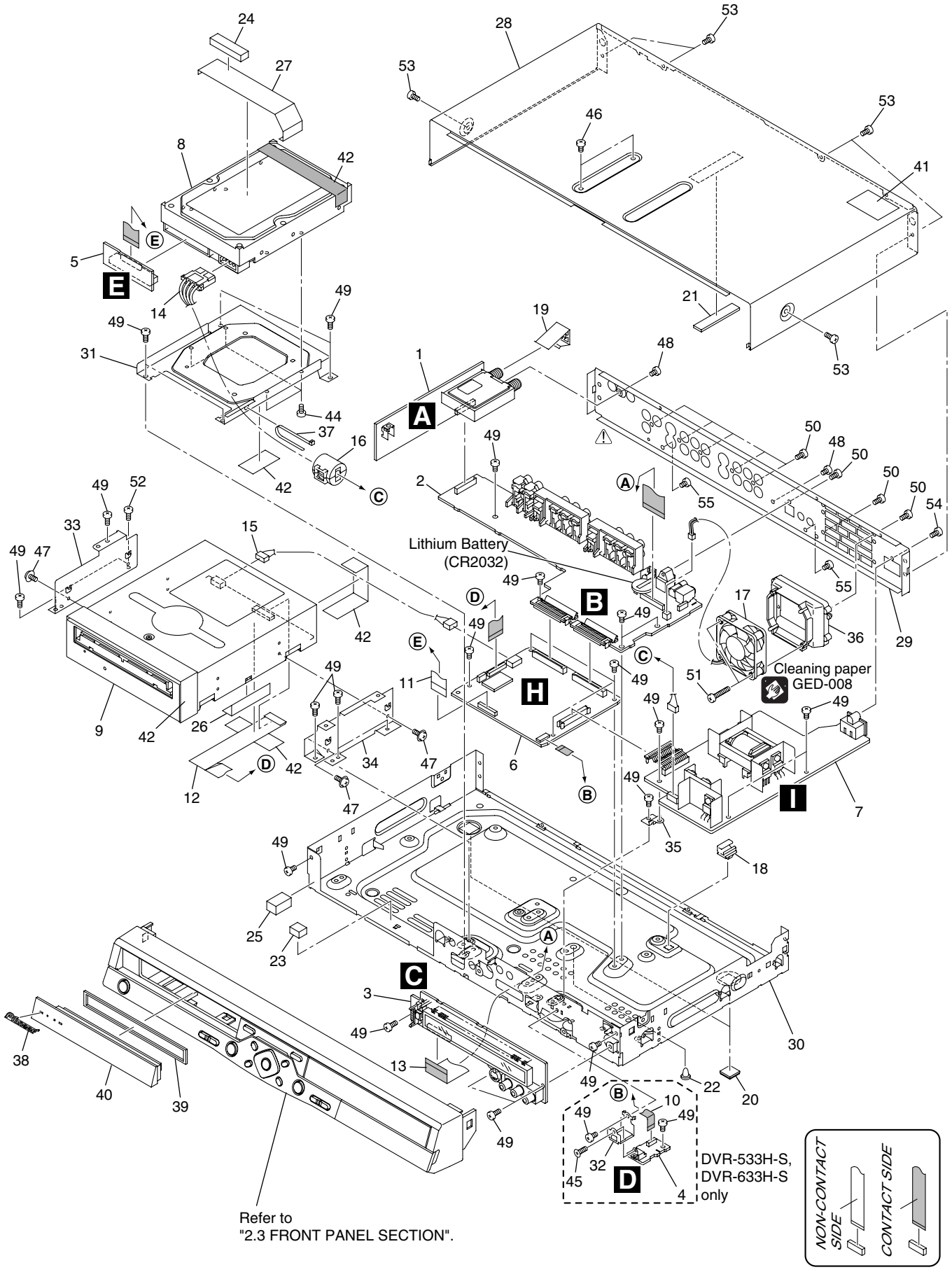
Mark	No.	Description	Part No.
⚠	1	Power Cable	ADG7075
	2	Audio / Video Cable (1.5m)	VDE1077
	3	RF Antenna Cable	VDE1088
	4	Remote Control Unit	VXX2967
	5	Battery Cover	AZA7424
NSP	6	Dry Cell Battery (R6P, AA)	VEM1030
NSP	7	DVD-RW Disc ver. 1.1	VZZ1003
	8	IR Blaster	VDX1010
NSP	9	Warranty Card	ARY7045
	10	Operating Instructions (English)	VRB1407
	11	Operating Instructions (French)	See Contrast table (2)
	12	Dual Layer IM (English)	VRB1392
	13	Dual Layer IM (French)	See Contrast table (2)
	14	Quick Start Guide (English)	VRG1010
	15	Quick Start Guide (French)	See Contrast table (2)
	16	Quick Guide (English)	VRG1013
	17	Quick Guide (French)	See Contrast table (2)
	18	HDD Caution 8L B	VRR1062
	19	HDD Caution 8L	VRR1063
	20	Polyethylene Bag B5	VHL1088
	21	Left Pad	VHA1386
	22	Right Pad	VHA1387
	23	Remote Control Holder	VHC1139
	24	Packing Case	See Contrast table (2)
	25	Mirror Mat	VHL1089

(2) CONTRAST TABLE

DVR-533H-S/KUXV, KCXV, DVR-633H-S/KUXV/CA, DVR-531H-S/KCXV and KUXV/CA are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-533H-S /KUXV	DVR-533H-S /KCXV	DVR-633H-S /KUXV/CA	DVR-531H-S /KCXV	DVR-531H-S /KUXV/CA
	11	Operating Instructions (French)	Not used	VRC1306	Not used	VRC1306	Not used
	13	Dual Layer IM (French)	Not used	VRC1280	Not used	VRC1280	Not used
	15	Quick Start Guide (French)	Not used	VRL1010	Not used	VRL1010	Not used
	17	Quick Guide (French)	Not used	VRL1011	Not used	VRL1011	Not used
	24	Packing Case	VHG2597	VHG2598	VHG2599	VHG2654	VHG2596

2.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

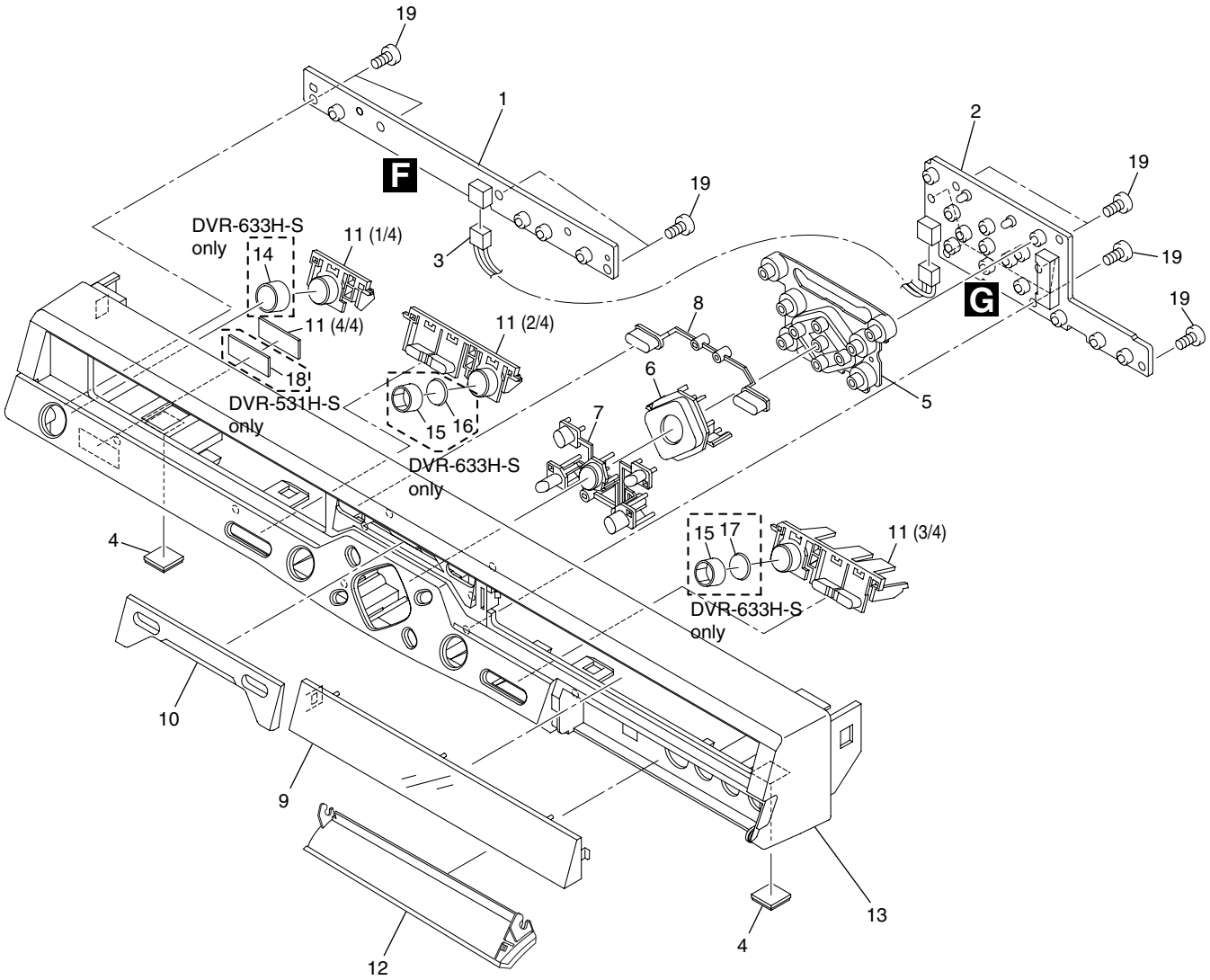
Mark	No.	Description	Part No.
	1	TUNB Assy (for service)	VXX3024
	2	JACB Assy	See Contrast table (2)
	3	FLJB Assy	VWG2536
	4	DVJB Assy	See Contrast table (2)
	5	ATAB Assy	VWV2123
	6	MAIN Assy (for service)	See Contrast table (2)
⚠	7	POWER SUPPLY Unit	VWR1391
	8	HDD	See Contrast table (2)
	9	DRIVE Assy R9R	VXX2987
	10	Flexible Cable (16P)	See Contrast table (2)
	11	Flexible Cable (40P)	VDA2065
	12	Flexible Cable (40P)	VDA2066
	13	Flexible Cable (27P)	VDA2067
	14	Housing Assy (4P)	VKP2357
	15	Housing Assy (4P)	VKP2358
	16	Ferrite Core	VTH1050
	17	DC Fan Motor	VXM1120
NSP	18	P. Plate Holder	PNY-405
	19	Earth Plate TU	VBK1156
	20	Rubber Foot	VEB1349
	21	Rubber Spacer (CR)	VEB1373
NSP	22	PC Support	VEC1749
	23	Gasket 10 x 7T	VEC2472
	24	Gasket 40 x 5T	VEC2473
	25	Gasket 10 x 25T	VEC2475
	26	Aluminum Tape 50 x 25	VEF1058
	27	Aluminum Tape 135 x 25	VEF1059
	28	Bonnet Case S	VXX3039
	29	Rear Panel	See Contrast table (2)
NSP	30	Base Chassis	VNB1052
NSP	31	HDD Stay	VNE2369
	32	DV Angle	See Contrast table (2)
NSP	33	Writer Stay L	VNE2371
NSP	34	Writer Stay R	VNE2372
NSP	35	PCB Base	VNE2378
	36	Fan Duct	VNK5693
NSP	37	Binder (BK-1)	ZCA-BK1
	38	Pioneer Name Plate	VAM1148
	39	Tray Sheet	VEC2467
	40	Tray Panel A	VNK5703
	41	Bonnet Label	VRW2171
NSP	42	Tape	ZTA-156A-19
	43	• • • • •	
	44	#6-32 Screw	DBA1125
	45	Screw	See Contrast table (2)
	46	Screw	BSZ30P060FTC
	47	Screw	AMZ30P060FTC
	48	Screw	BSZ30P040FTC
	49	Screw	BBZ30P060FTC
	50	Screw	BPZ30P080FTC
	51	Screw	BPZ30P250FTC
	52	Screw	BSR30P060FTC
	53	Screw	BSZ30P060FTC
	54	Screw	PBZ30P080FTC
	55	Screw	BBZ30P060FTC

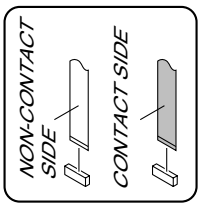
(2) CONTRAST TABLE

DVR-533H-S/KUXV, KCXV, DVR-633H-S/KUXV/CA, DVR-531H-S/KCXV and KUXV/CA are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-533H-S /KUXV	DVR-533H-S /KCXV	DVR-633H-S /KUXV/CA	DVR-531H-S /KCXV	DVR-531H-S /KUXV/CA
	2	JACB Assy	VWV2111	VWV2111	VWV2111	VWV2112	VWV2112
	4	DVJB Assy	VWG2523	VWG2523	VWG2523	Not used	Not used
	6	MAIN Assy (for service)	VXX2993	VXX2993	VXX2993	VXX2994	VXX2994
	8	HDD 80G WD800BBJKC S	VXF1066	VXF1066	Not used	VXF1066	VXF1066
	8	HDD 160G WD1600BBGUC S	Not used	Not used	VXF1068	Not used	Not used
	10	Flexible Cable (16P)	VDA2064	VDA2064	VDA2064	Not used	Not used
	29	Rear Panel	VNA2771	VNA2771	VNA2792	VNA2794	VNA2794
	32	DV Angle	VNE2370	VNE2370	VNE2370	Not used	Not used
	45	Screw	VBA1098	VBA1098	VBA1098	Not used	Not used

2.3 FRONT PANEL SECTION





(1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	PSWB Assy	VWG2524
	2	RSWB Assy	VWG2528
	3	Housing Assy (3P)	VKP2360
	4	Rubber Foot	VEB1349
	5	Rubber Hinge	VEB1371
	6	Cursor Key	VNK5695
	7	Enter Key	VNK5696
	8	Eject Key A	VNK5697
	9	FL Lens A	VNK5698
	10	Center Lens AC	VNK5699
	11	Main Key A	See Contrast table (2)
	12	Door A	See Contrast table (2)
	13	Front Panel A	See Contrast table (2)
	14	Key Top A	See Contrast table (2)
	15	Ring A	See Contrast table (2)
	16	PLAY Plate A	See Contrast table (2)
	17	REC Plate A	See Contrast table (2)
	18	Sensor-matic Seal	See Contrast table (2)
	19	Screw	BPZ30P080FTC

(2) CONTRAST TABLE

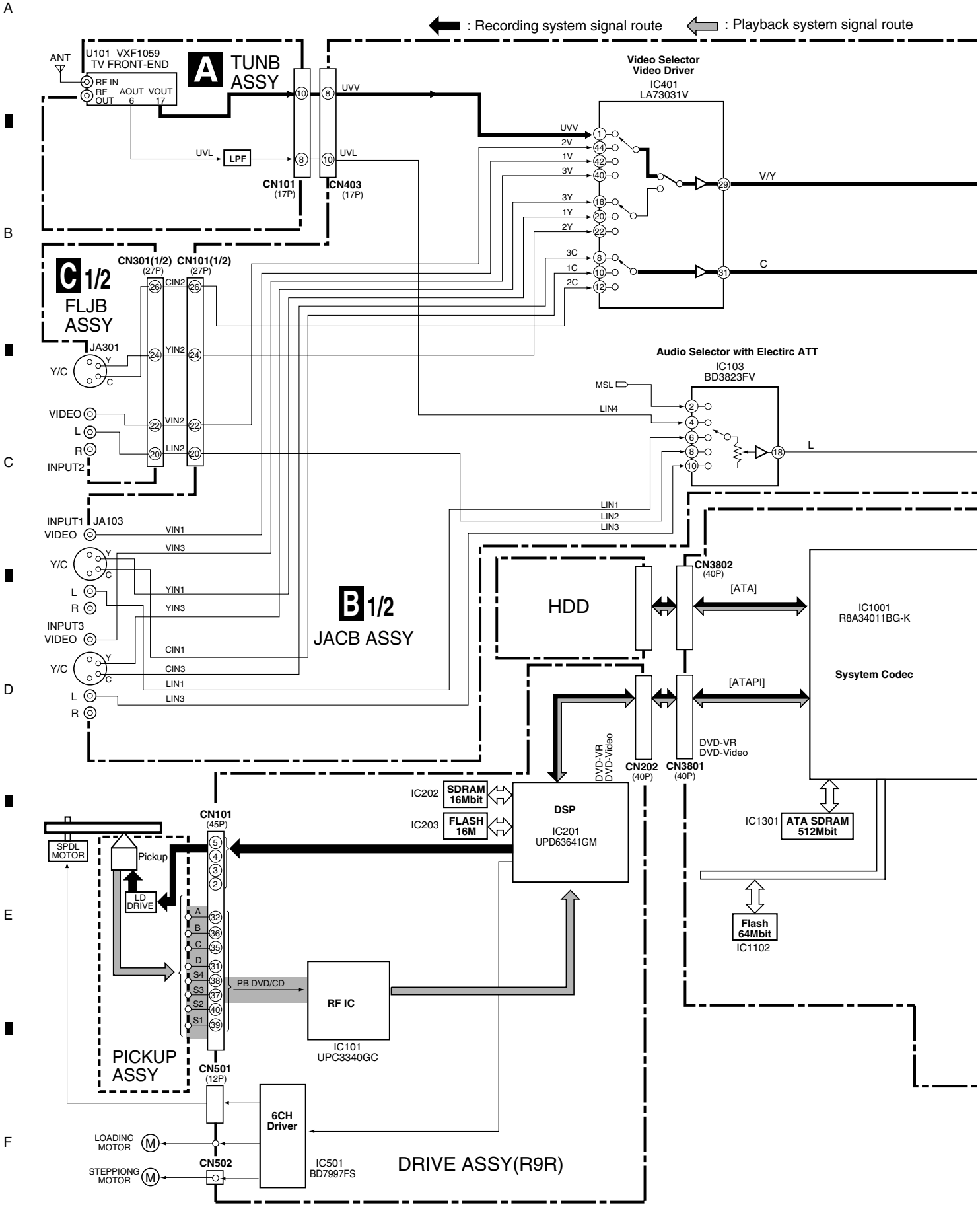
DVR-533H-S/KUXV, KCXV, DVR-633H-S/KUXV/CA, DVR-531H-S/KCXV and KUXV/CA are constructed the same except for the following:

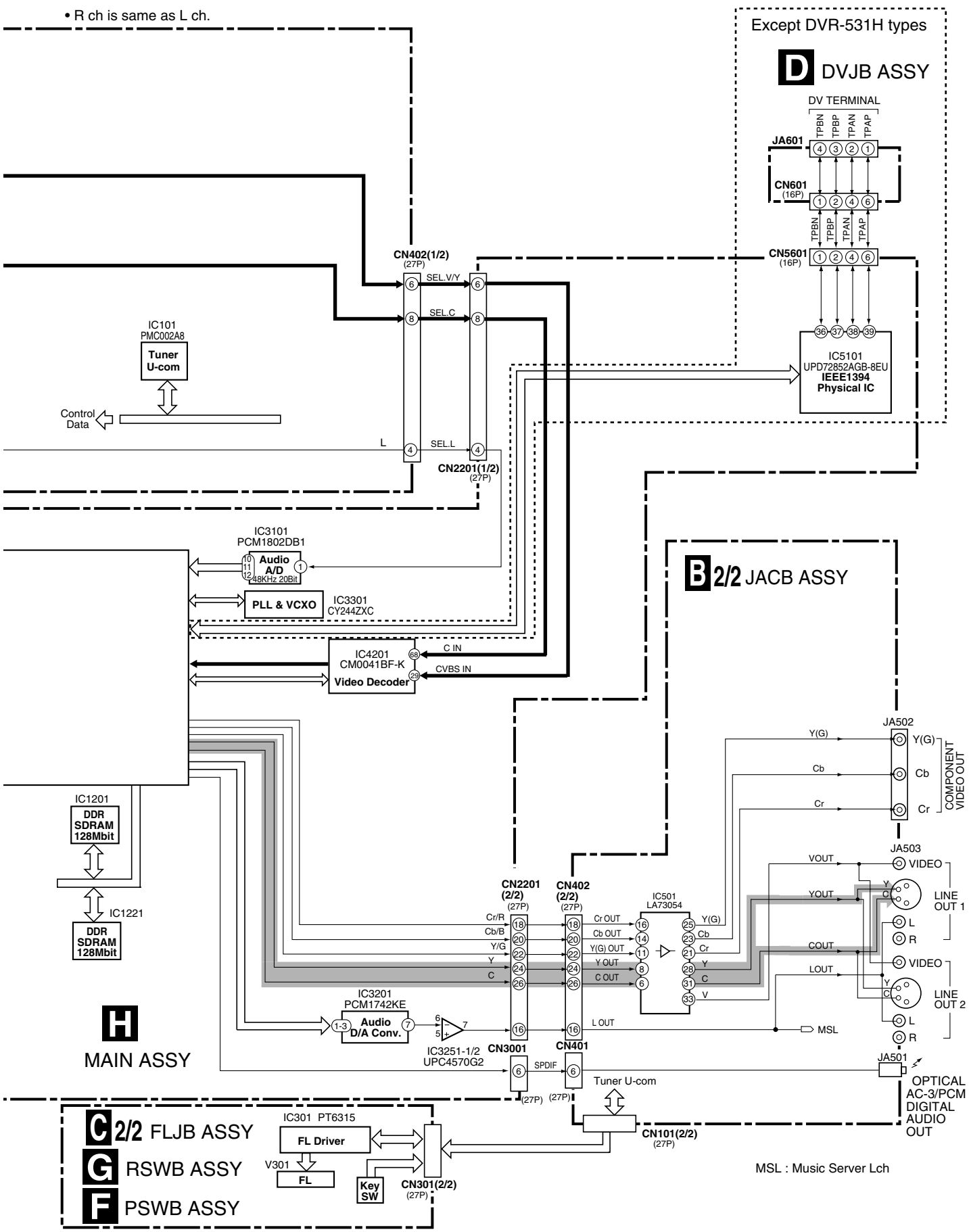
Mark	No.	Symbol and Description	DVR-533H-S /KUXV	DVR-533H-S /KCXV	DVR-633H-S /KUXV/CA	DVR-531H-S /KCXV	DVR-531H-S /KUXV/CA
	11	Main Key A	VNK5701	VNK5701	Not used	VNK5701	VNK5701
	11	Main Key Base A	Not used	Not used	VNK5737	Not used	Not used
	12	Door A	VNK5702	VNK5702	VNK5702	VNK5815	VNK5815
	13	Front Panel A	VNK5730	VNK5730	VNK5818	VNK5817	VNK5817
	14	Key Top A	Not used	Not used	VNK5717	Not used	Not used
	15	Ring A	Not used	Not used	VNK5738	Not used	Not used
	16	PLAY Plate A	Not used	Not used	VNK5739	Not used	Not used
	17	REC Plate A	Not used	Not used	VNK5740	Not used	Not used
	18	Sensor-matic Seal	Not used	Not used	Not used	VAN1004	VAN1004

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

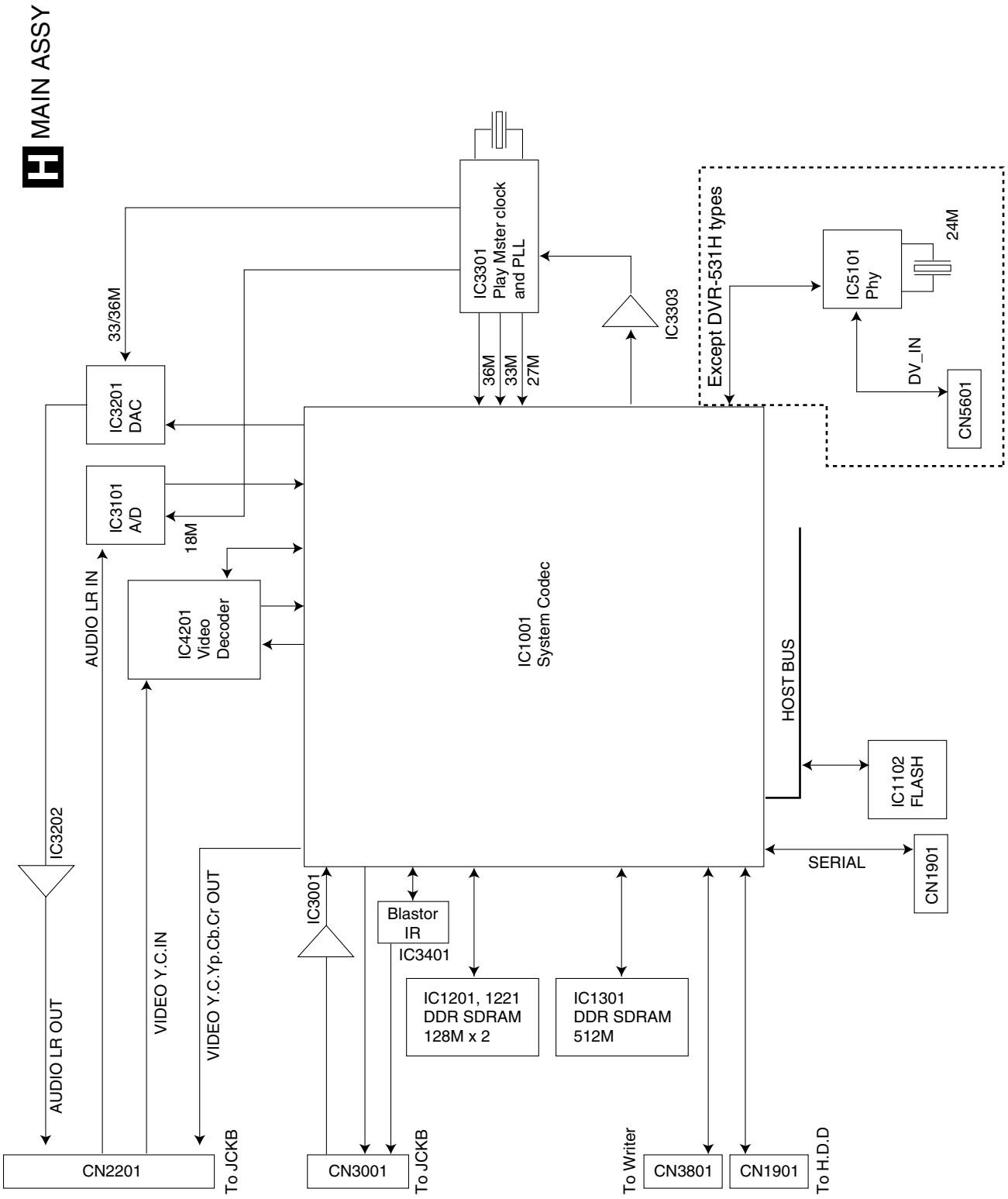
3.1 BLOCK DIAGRAM

3.1.1 OVERALL BLOCK DIAGRAM




• R ch is same as L ch.
Except DVR-531H types
D DVJB ASSY
DV TERMINAL
TPBN
TPBP
TPAN
TPAP
JA601
CN601
(16P)
CN5601
(16P)
IC5101
UPD72852AGB-8EU
IEEE1394
Physical IC
CN402(1/2)
(27P)
SEL.V/Y
SEL.C
SEL.L
L
IC101
PMC002A8
Tuner
U-com
Control
Data
CN2201(1/2)
(27P)
IC3101
PCM1802DB1
Audio
A/D
48KHz 20Bit
PLL & VCXO
IC3301
CY244ZXC
IC4201
CM0041BF-K
Video Decoder
C IN
CVBS IN
B 2/2 JACB ASSY
JA502
Y(G)
Cb
Cr
COMPONENT
VIDEO OUT
IC1201
DDR
SDRAM
128Mbit
IC1221
DDR
SDRAM
128Mbit
JA503
VOUT
VIDEO
YOUT
LINE
OUT 1
COUT
LOUT
LINE
OUT 2
L
R
CN2201
(2/2)
(27P)
CN402
(2/2)
(27P)
Cr/R
Cb/B
Y/G
Y
C
Cr OUT
Cb OUT
Y(G) OUT
Y OUT
C OUT
IC501
LA73054
V
IC3201
PCM1742KE
Audio
D/A Conv.
IC3251-1/2
UPC4570G2
CN3001
CN401
L OUT
MSL
SPDIF
JA501
OPTICAL
AC-3/PCM
DIGITAL
AUDIO
OUT
Tuner U-com
CN101(2/2)
(27P)
H
MAIN ASSY
C 2/2 FLJB ASSY
G RSWB ASSY
F PSWB ASSY
IC301 PT6315
FL Driver
V301
FL
Key
SW
CN301(2/2)
(27P)
MSL : Music Server Lch

3.1.2 MAIN ASSY



A

B

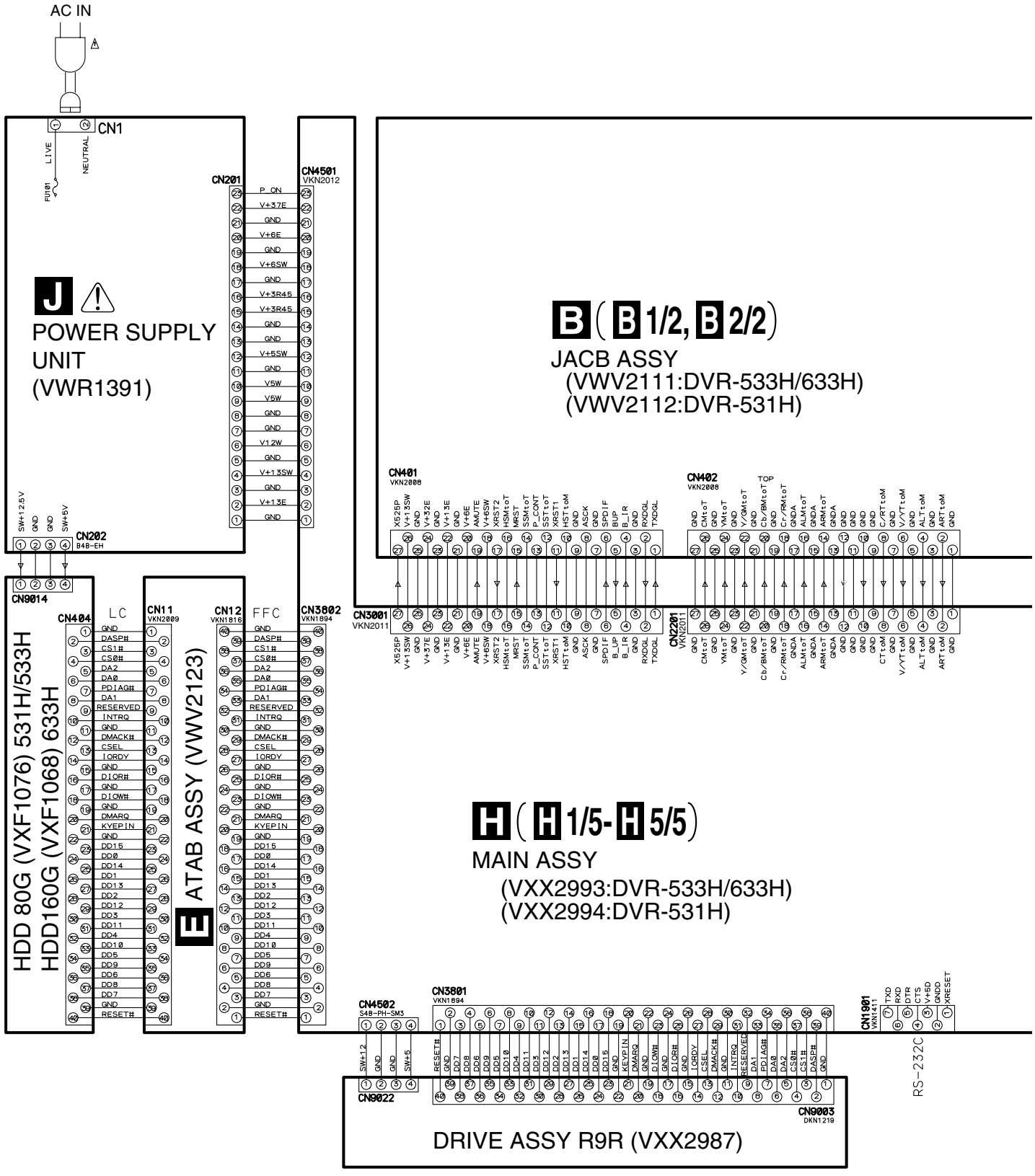
C

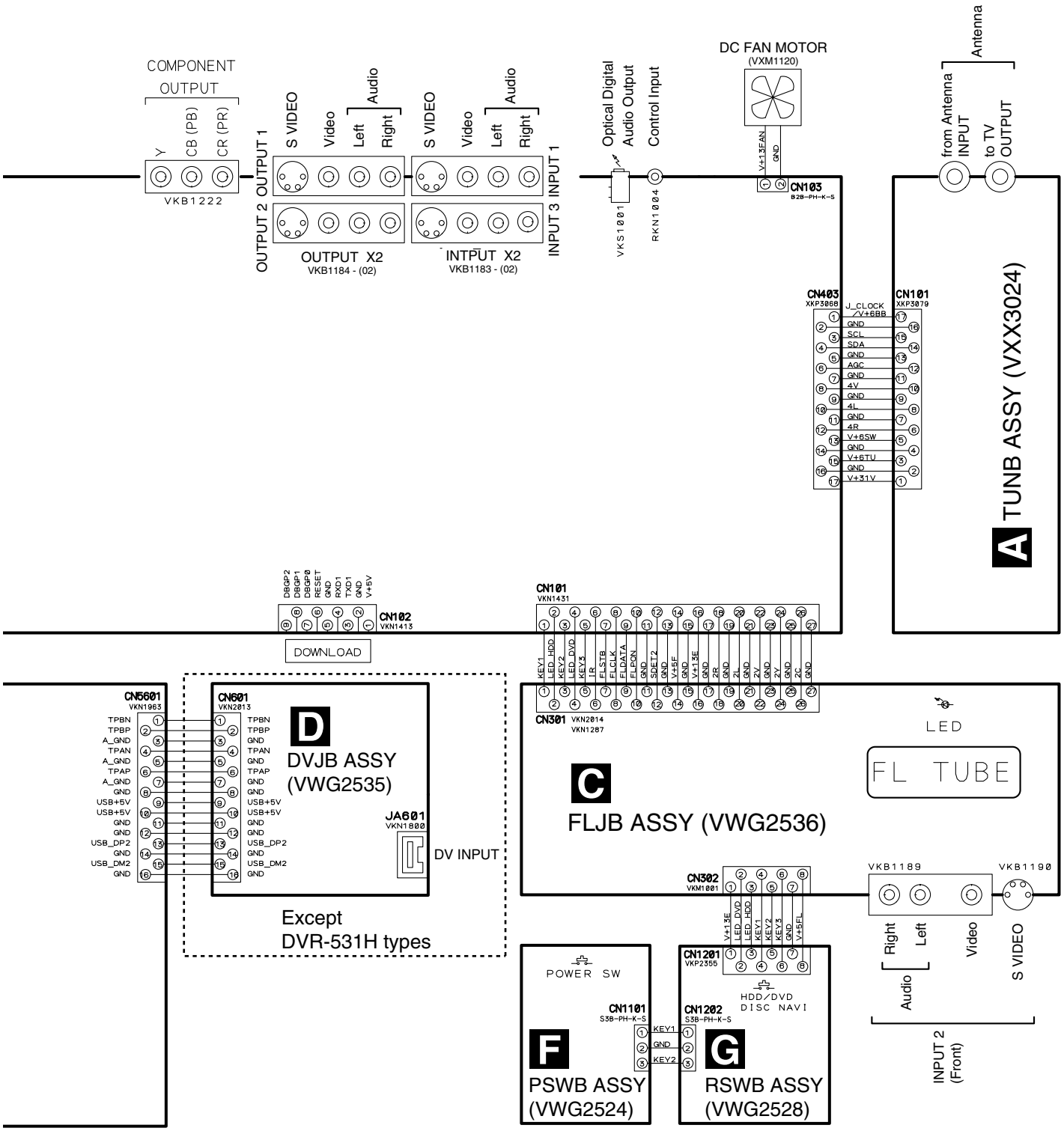
D

E

F

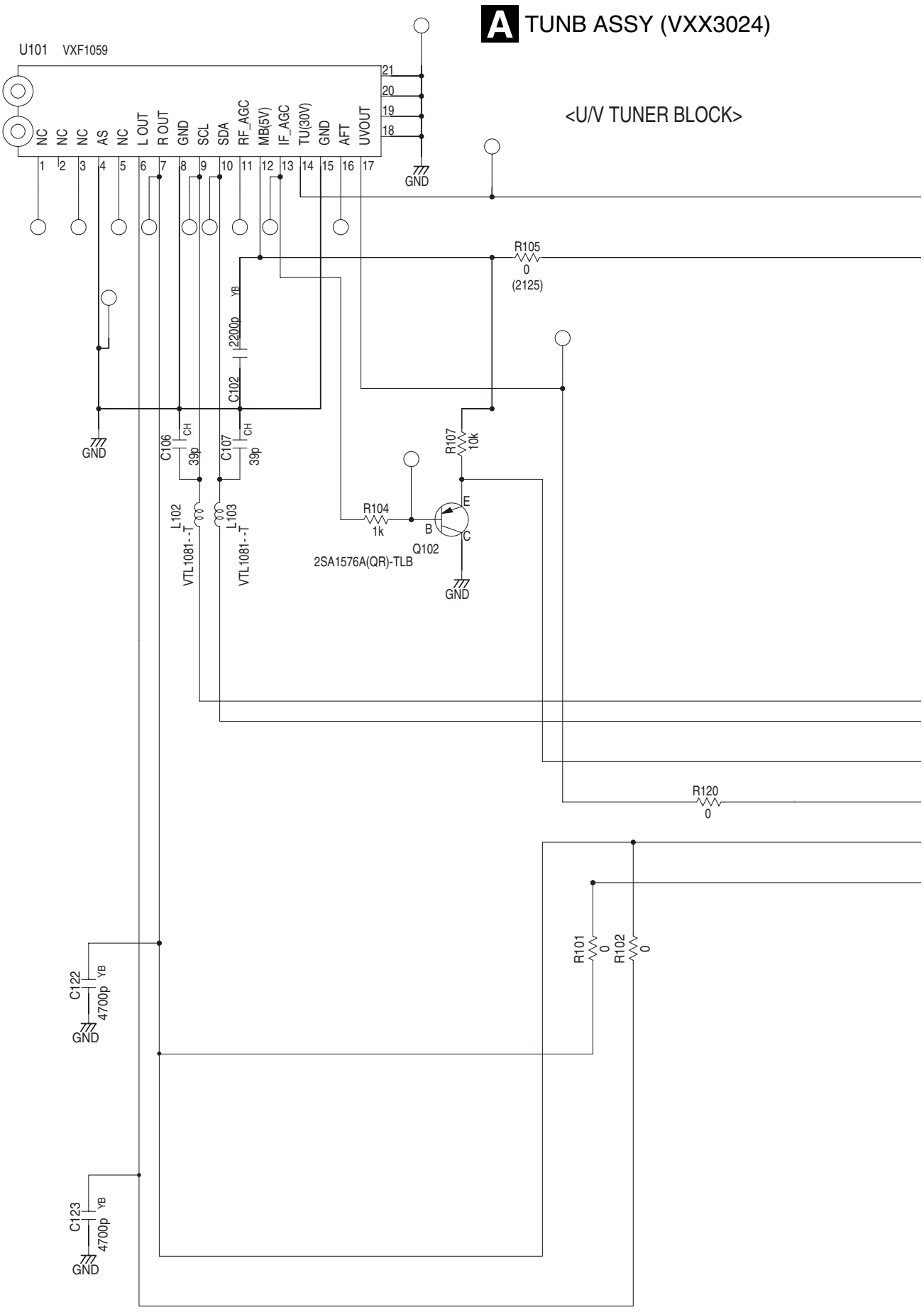
3.2 OVERALL WIRING DIAGRAM

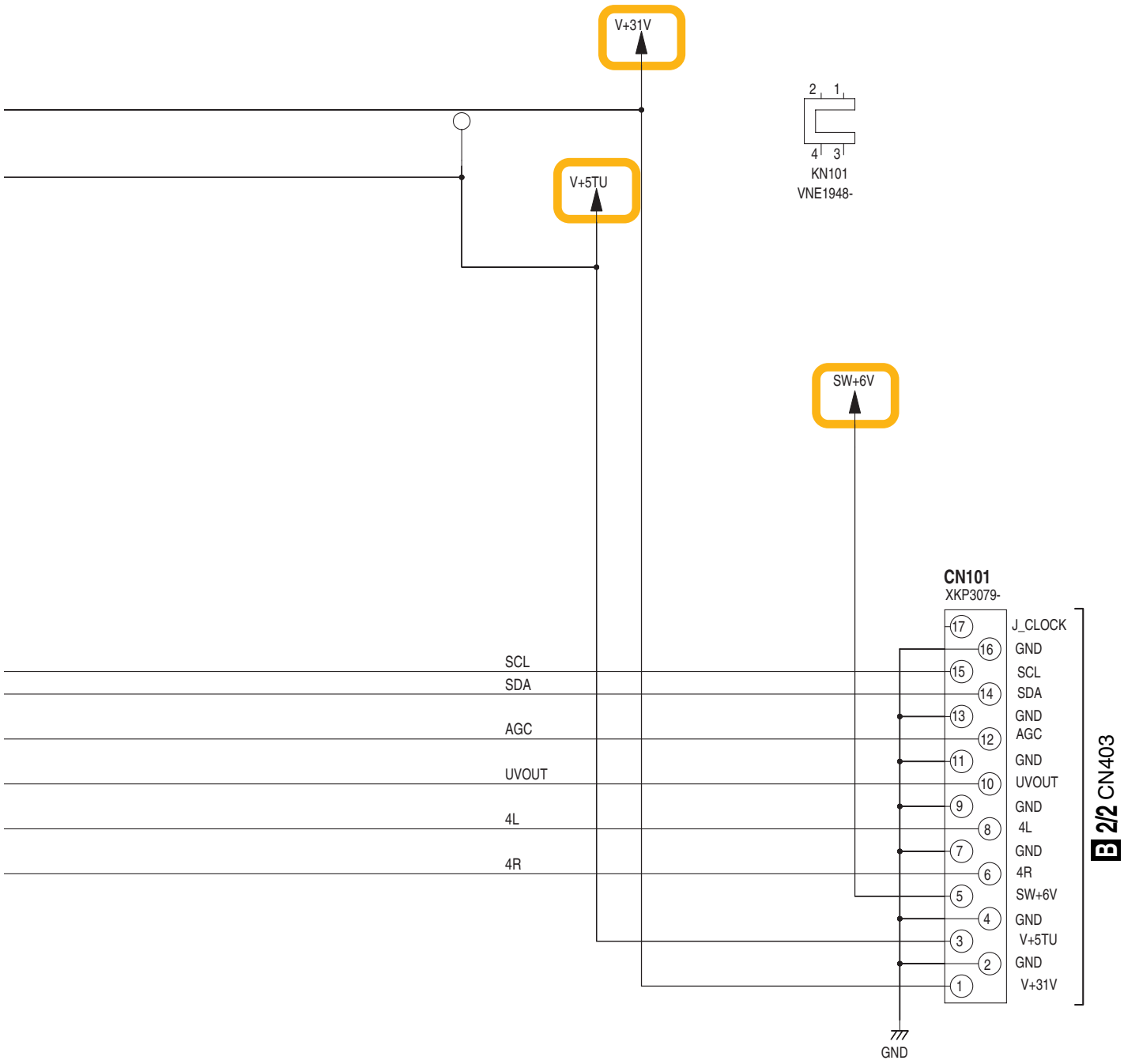


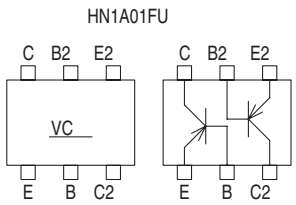


- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.

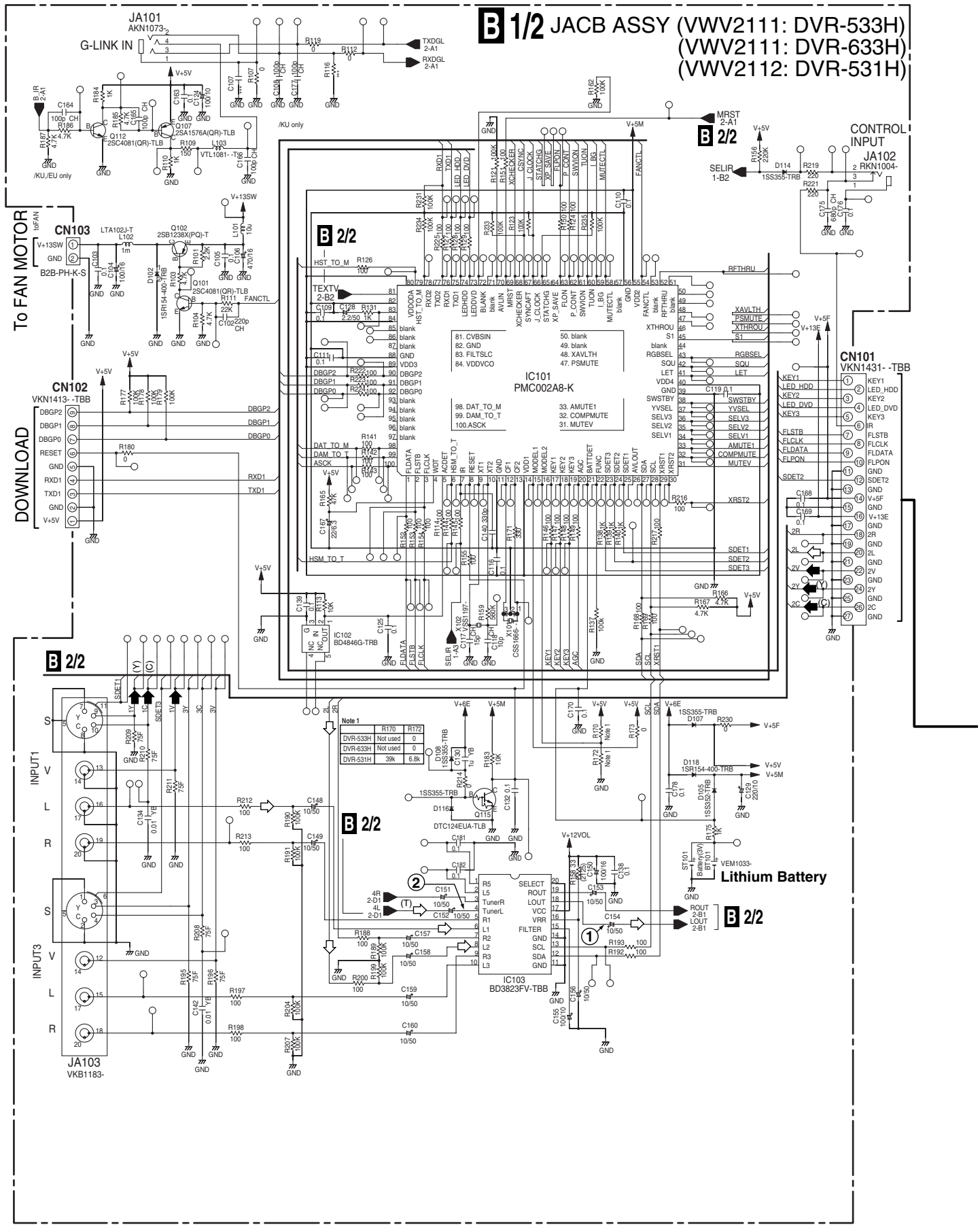
3.3 TUNB ASSY


A TUNB ASSY (VXX3024)
<U/V TUNER BLOCK>
U101 VXF1059
NC NC NC AS NC L OUT R OUT GND SCL SDA RF_AGC MB(5V) IF_AGC TU(30V) GND AFT UVOUT
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
21 20 19 18
GND
R105 0 (2125)
C102 2200p YB
C106 39p CH
C107 39p CH
R107 10k
R104 1k
Q102 2SA1576A(QR)-TLB
E B C
L102 VTL1081--T
L103 VTL1081--T
R120 0
R101 0
R102 0
C122 4700p YB
C123 4700p YB
GND


V+31V
V+5TU
SW+6V
2 1
4 3
KN101
VNE1948-
CN101
XKP3079-
17 J_CLOCK
16 GND
15 SCL
14 SDA
13 GND
12 AGC
11 GND
10 UVOUT
9 GND
8 4L
7 GND
6 4R
5 SW+6V
4 GND
3 V+5TU
2 GND
1 V+31V
B 2/2 CN403
SCL
SDA
AGC
UVOUT
4L
4R
GND

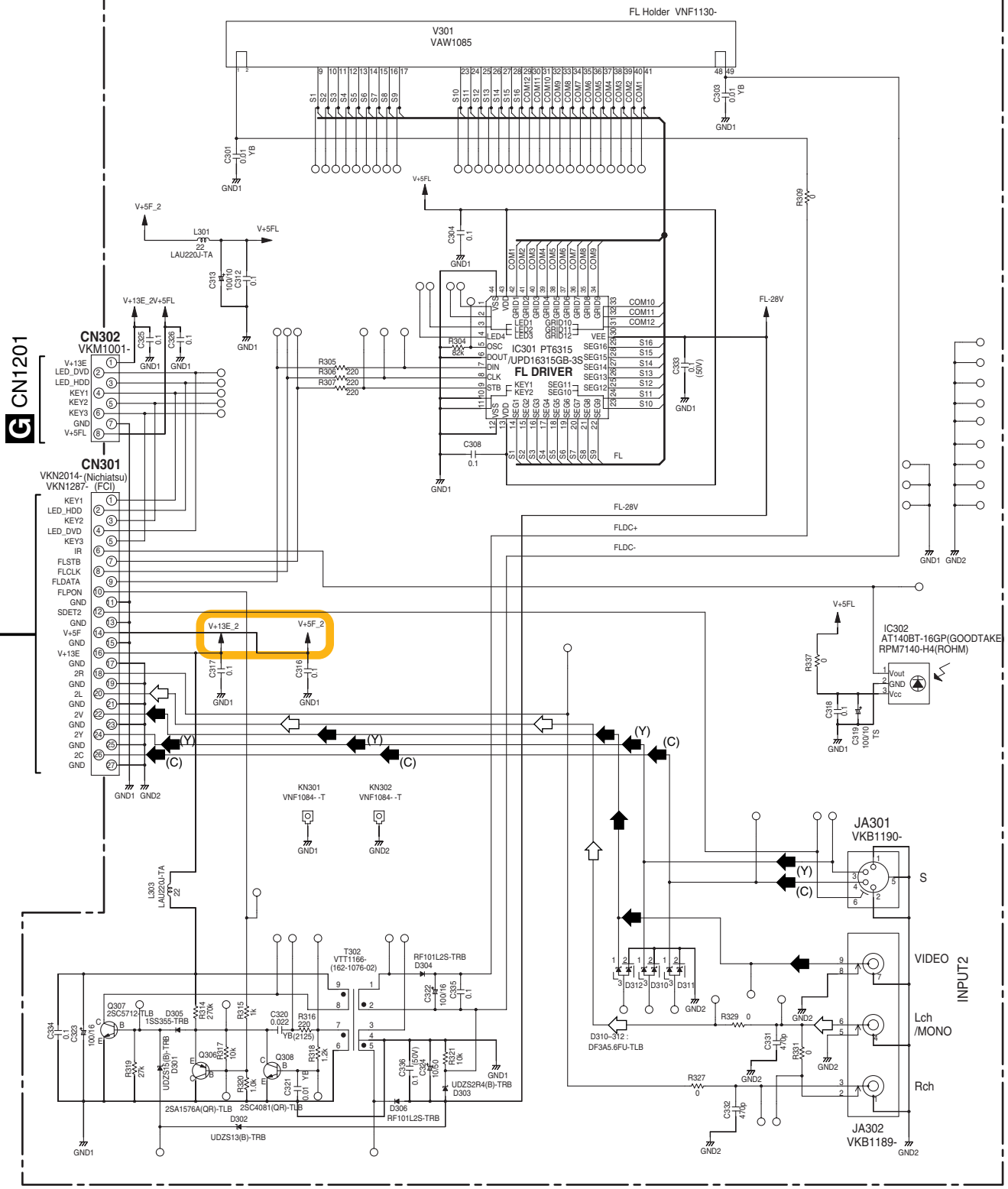

HN1A01FU
C B2 E2
VC
E B C2
C B2 E2
E B C2

3.4 JACB(1/2) and FLJB ASSYS



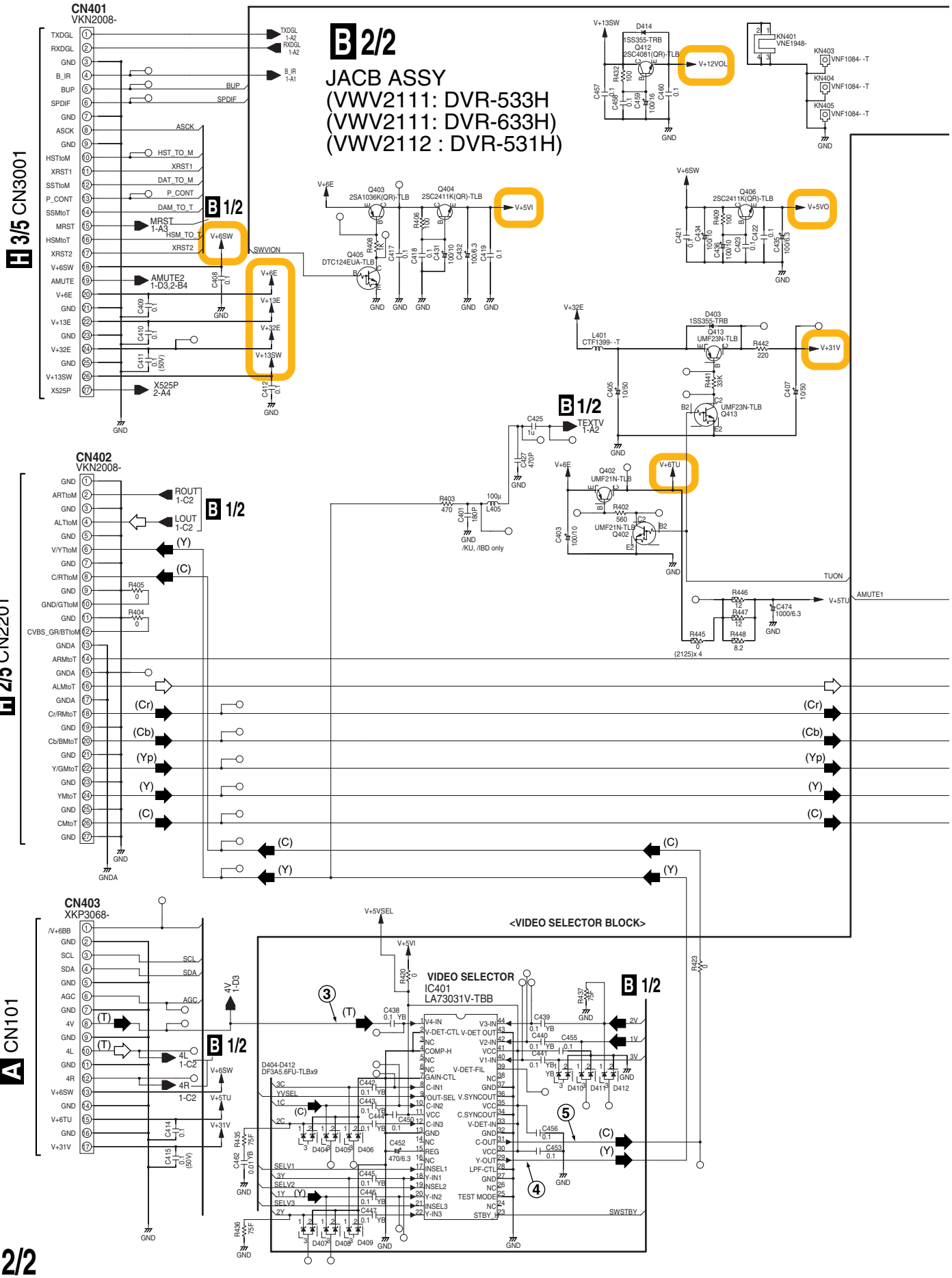
(Y) : Video Signal Route
(Y) : Y Video Signal Route
(C) : C Video Signal Route
: AUDIO SIGNAL ROUTE (L ch)
(T) : AUDIO SIGNAL ROUTE (TUNER L ch)

C FLJB ASSY (VWG2536)



B 1/2 C

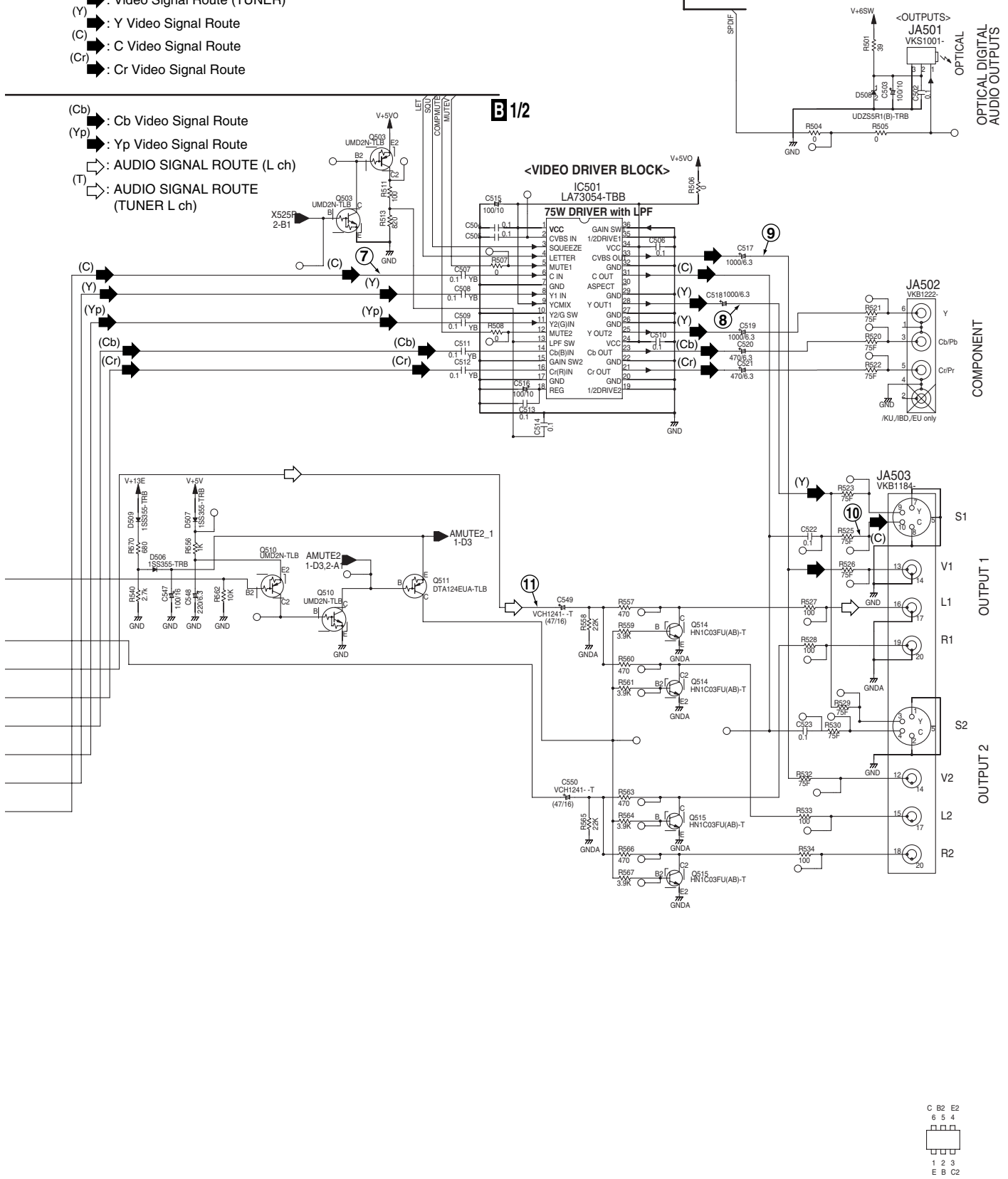
3.5 JACB ASSY(2/2)



(Video) : Video Signal Route
(T) : Video Signal Route (TUNER)
(Y) : Y Video Signal Route
(C) : C Video Signal Route
(Cr) : Cr Video Signal Route

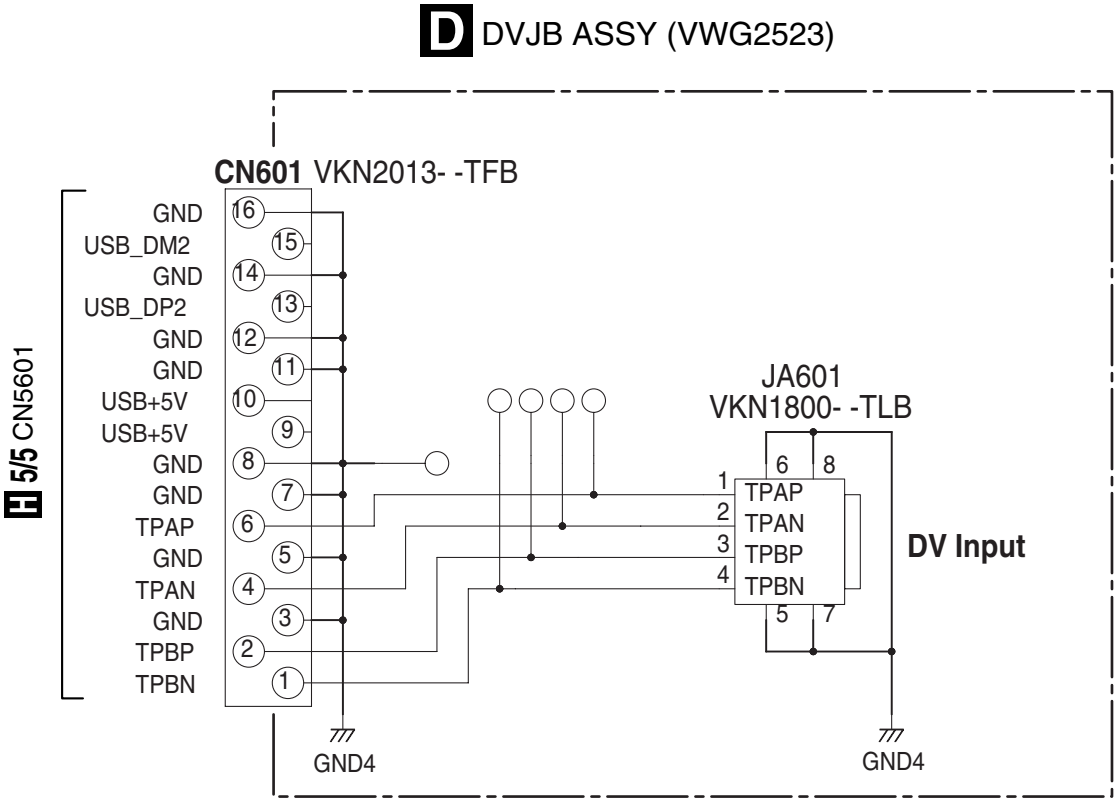
(Cb) : Cb Video Signal Route
(Yp) : Yp Video Signal Route
: AUDIO SIGNAL ROUTE (L ch)
(T) : AUDIO SIGNAL ROUTE (TUNER L ch)

B 1/2

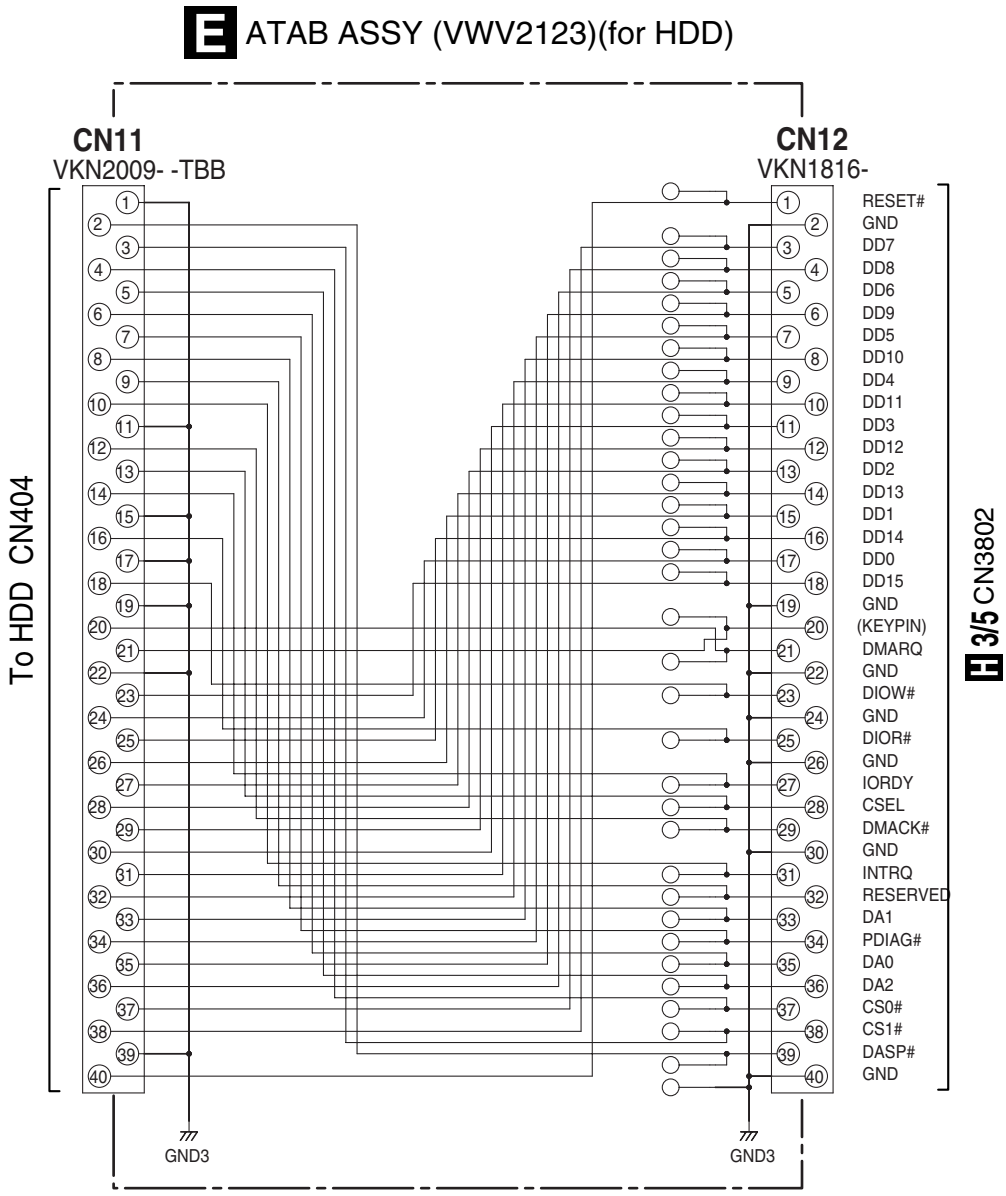


B 2/2

3.6 DVJB ASSY


D DVJB ASSY (VWG2523)
CN601 VKN2013- -TFB
H 5/5 CN5601
GND
USB_DM2
GND
USB_DP2
GND
GND
USB+5V
USB+5V
GND
GND
TPAP
GND
TPAN
GND
TPBP
TPBN
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
JA601
VKN1800- -TLB
1 TPAP
2 TPAN
3 TPBP
4 TPBN
6
8
5
7
DV Input
GND4
GND4

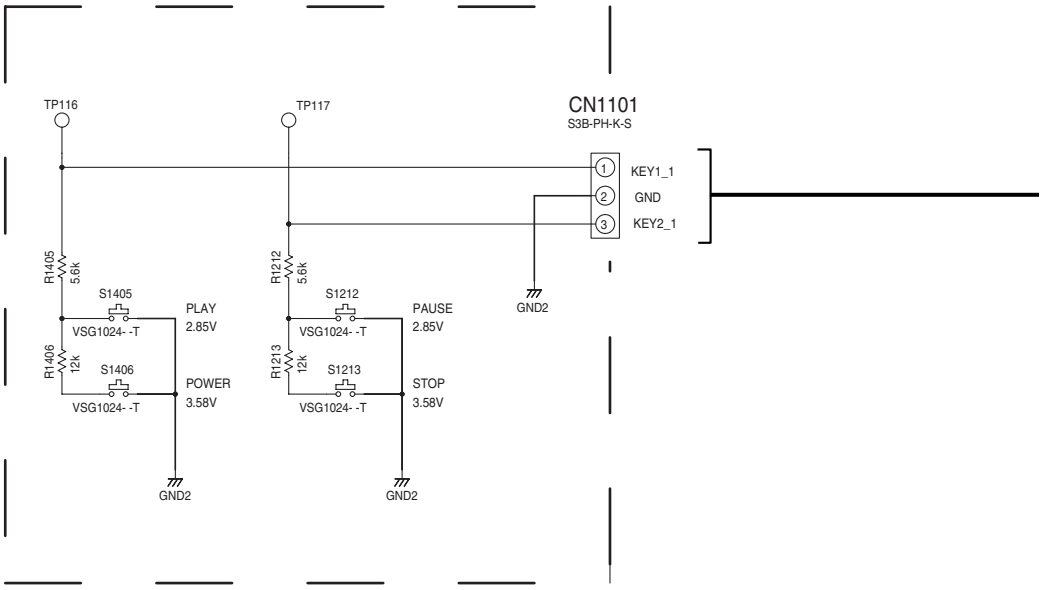
3.7 ATAB ASSY


E ATAB ASSY (VWV2123)(for HDD)
CN11
VKN2009- -TBB
CN12
VKN1816-
To HDD CN404
E 3/5 CN3802
RESET#
GND
DD7
DD8
DD6
DD9
DD5
DD10
DD4
DD11
DD3
DD12
DD2
DD13
DD1
DD14
DD0
DD15
GND
(KEYPIN)
DMARQ
GND
DIOW#
GND
DIOR#
GND
IORDY
CSEL
DMACK#
GND
INTRQ
RESERVED
DA1
PDIAG#
DA0
DA2
CS0#
CS1#
DASP#
GND
GND3
GND3

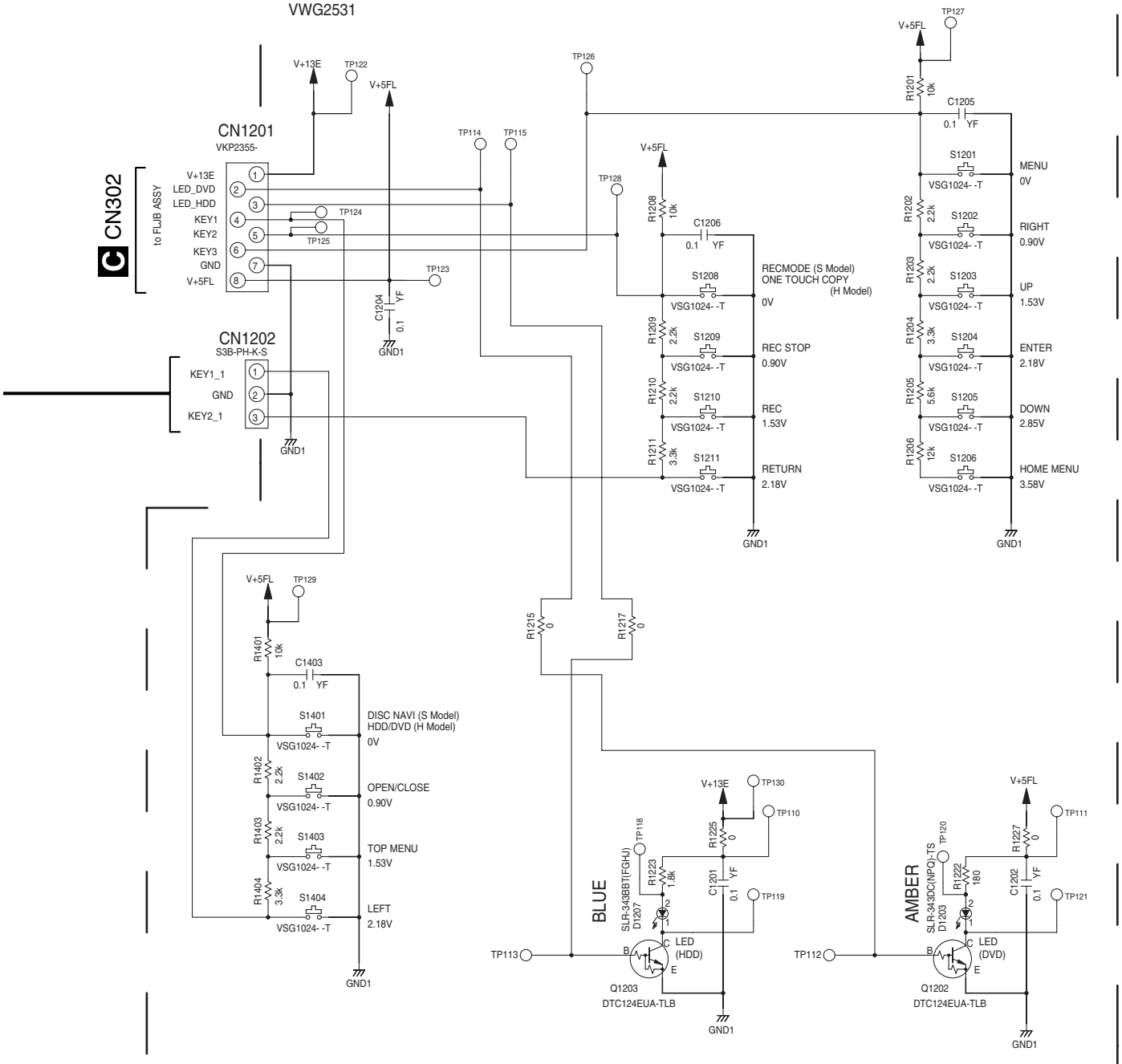
3.8 PSWB and RSWB ASSYS

Switches
S1212:PAUSE
S1213:STOP
S1405:PLAY
S1406:POWER

F PSWB ASSY (VWG2524)



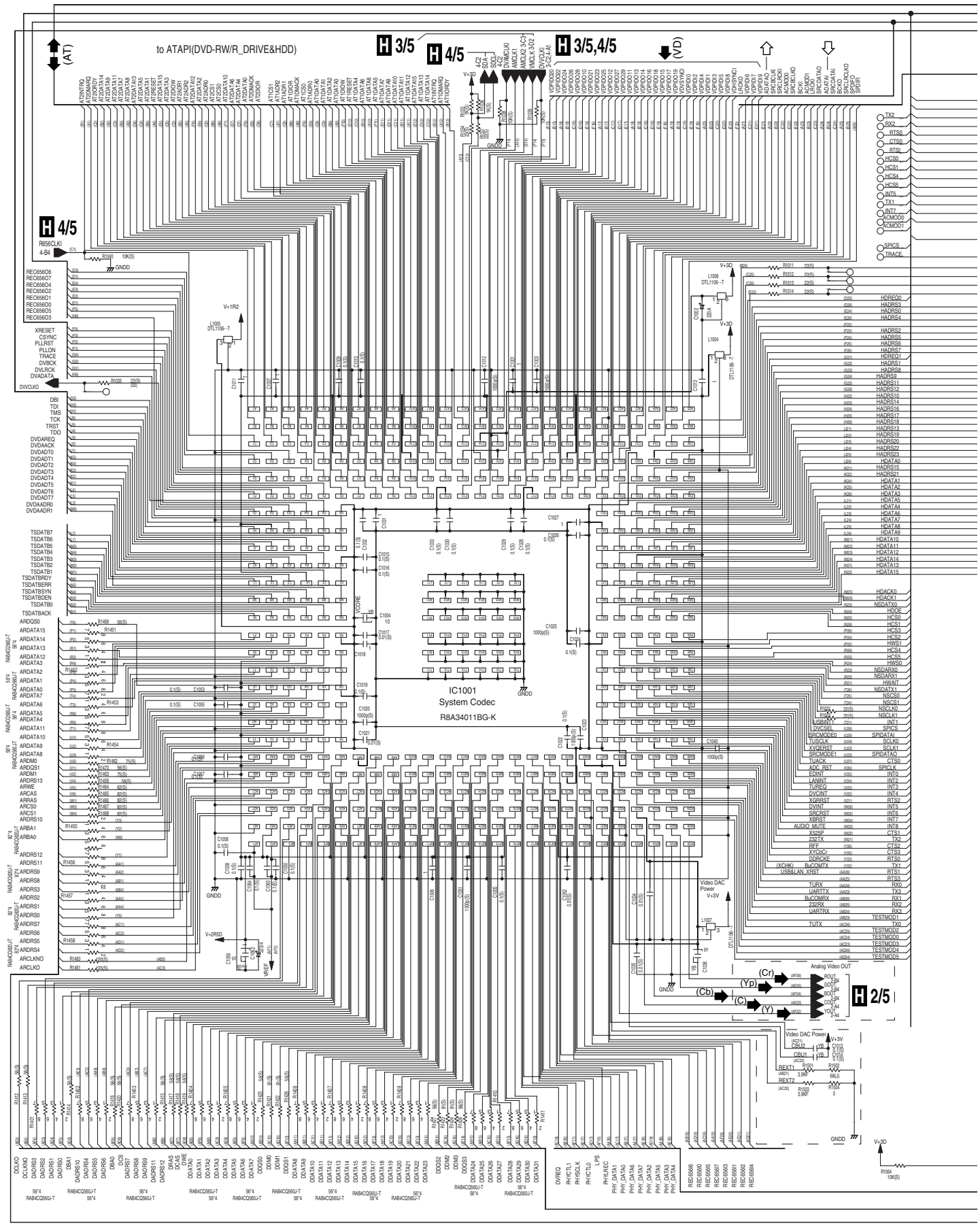
G RSWB ASSY (VWG2528)



Switches

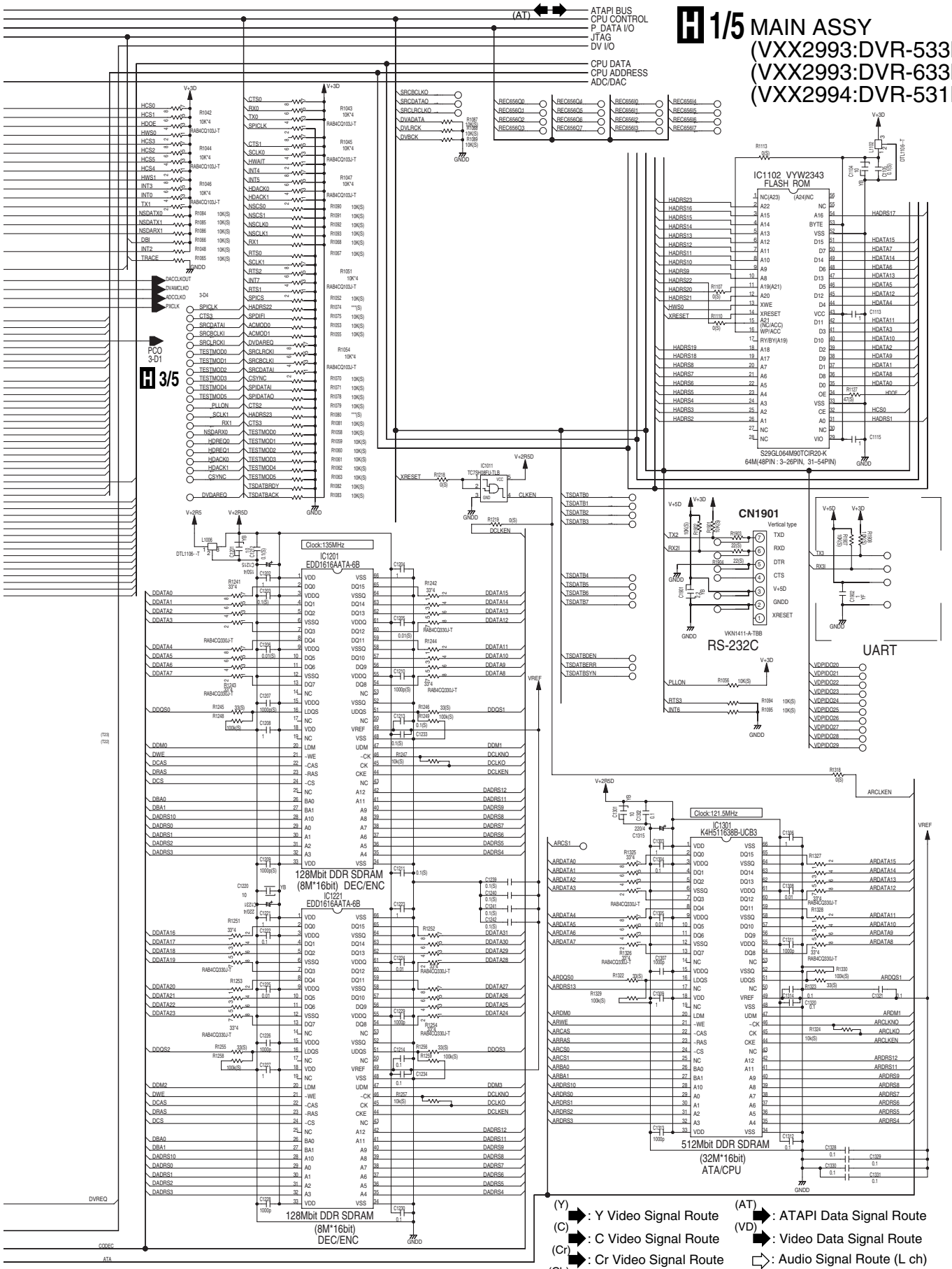
S1201:MENU
S1202:RIGHT
S1203:UP
S1204:ENTER
S1205:DOWN
S1206:HOME MENU
S1208:ONE TOUCH COPY
S1209:REC STOP
S1210:REC
S1211:RETURN
S1401:HDD/DVD
S1402:OPEN/CLOSE
S1403:TOP MENU
S1404:LEFT

3.9 MAIN ASSY(1/5)



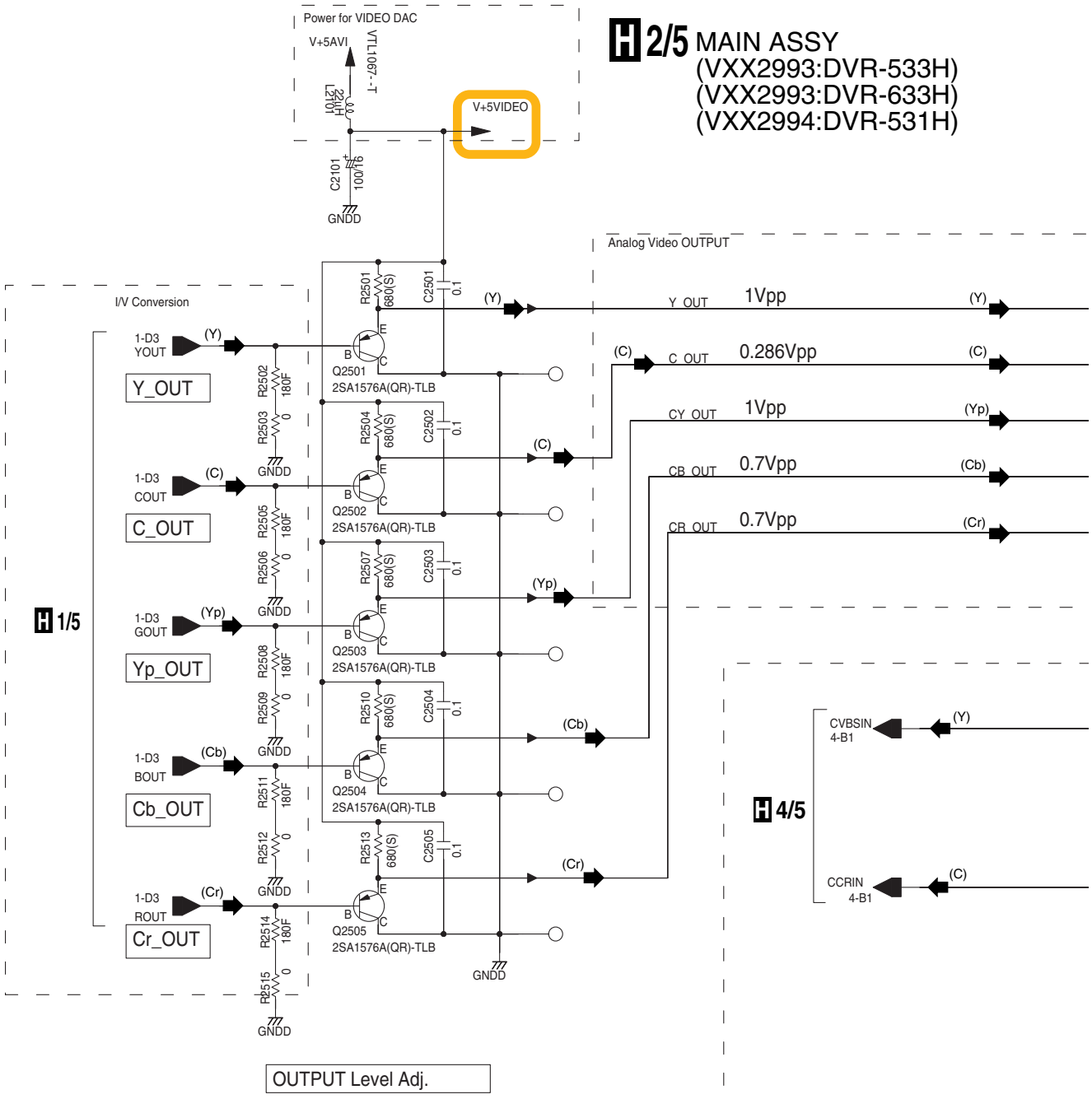
H 1/5 MAIN ASSY

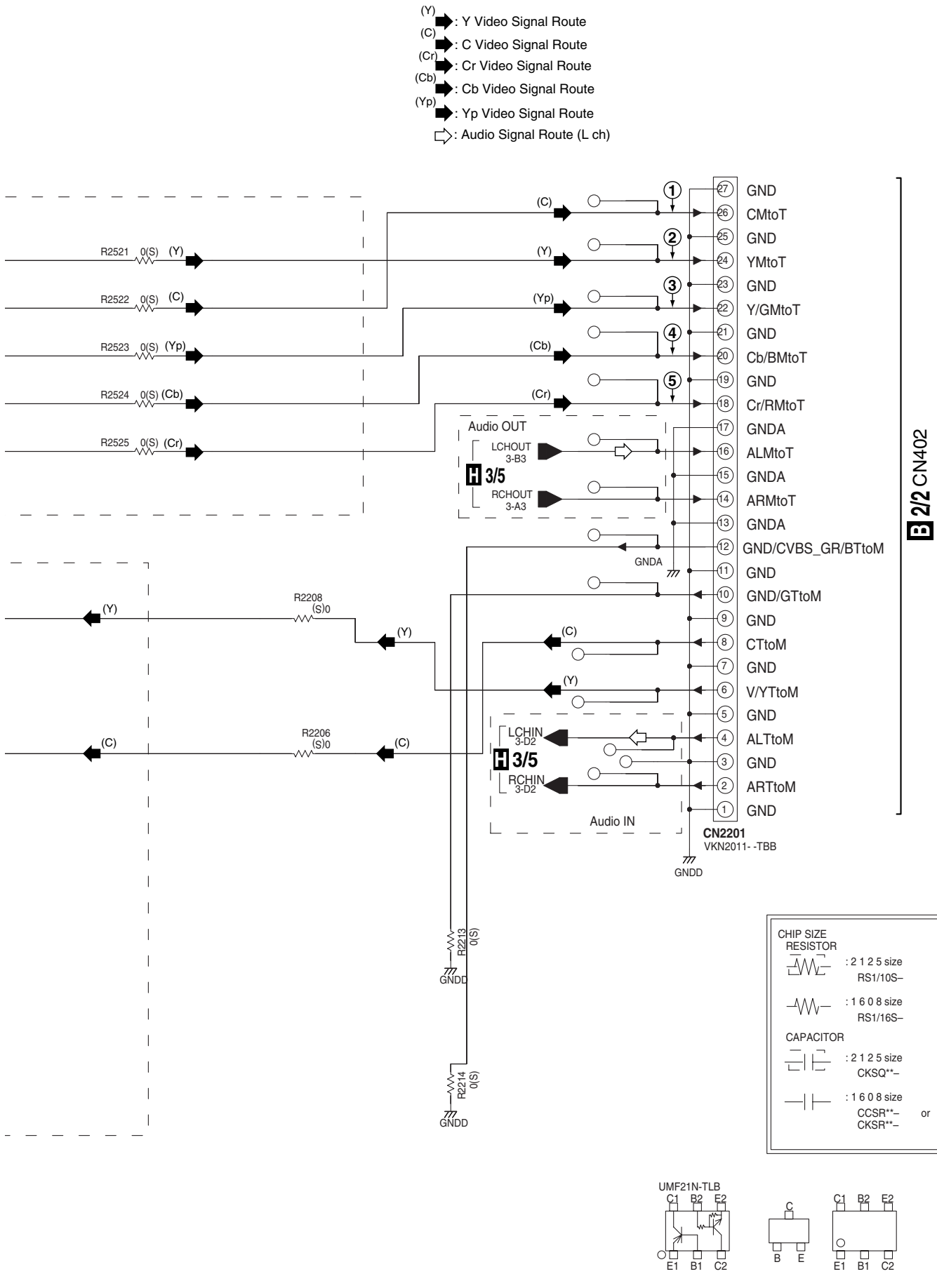
(VXX2993:DVR-533H)
(VXX2993:DVR-633H)
(VXX2994:DVR-531H)



H 1/5

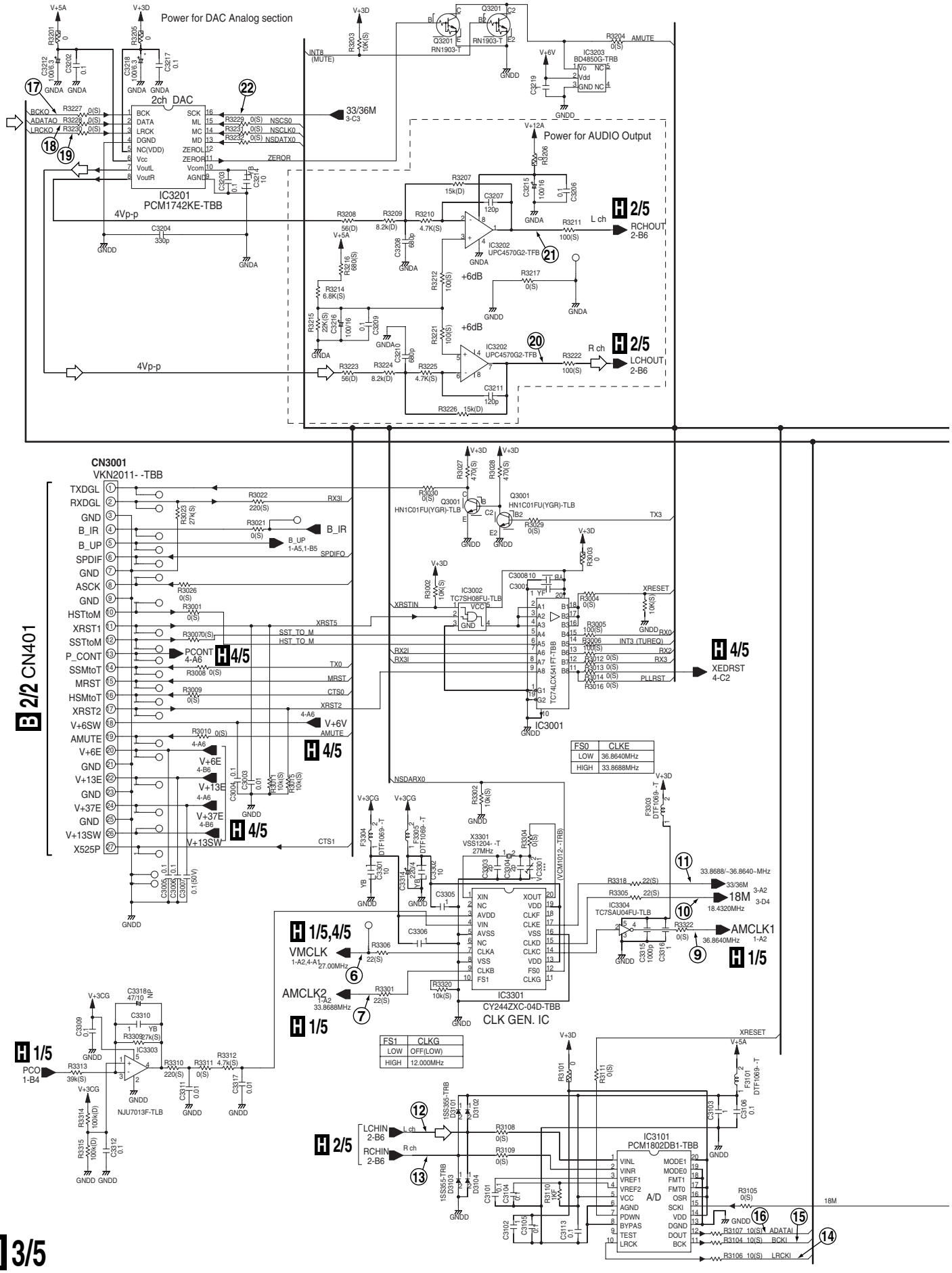
3.10 MAIN ASSY(2/5)



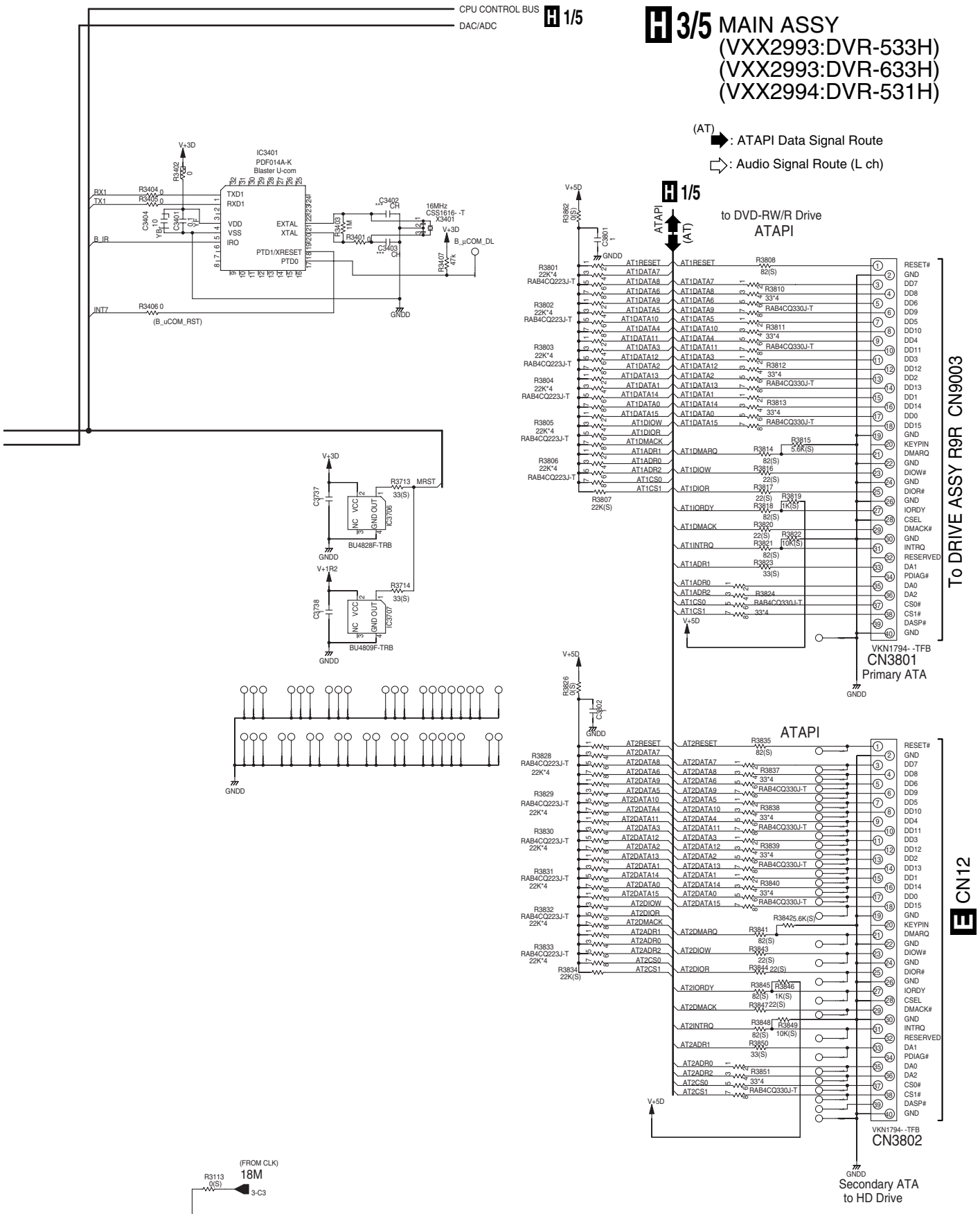

(Y): Y Video Signal Route
(C): C Video Signal Route
(Cr): Cr Video Signal Route
(Cb): Cb Video Signal Route
(Yp): Yp Video Signal Route
: Audio Signal Route (L ch)
R2521 0(S) (Y)
R2522 0(S) (C)
R2523 0(S) (Yp)
R2524 0(S) (Cb)
R2525 0(S) (Cr)
Audio OUT
LCHOUT 3-B3
RCHOUT 3-A3
H 3/5
R2208 (S)0
R2206 (S)0
LCHIN 3-D2
RCHIN 3-D2
Audio IN
R2213 0(S)
R2214 0(S)
GNDD
GNDA
1 GND
2 CMtoT
3 GND
4 YMtoT
5 GND
6 Y/GMtoT
7 GND
8 Cb/BMtoT
9 GND
10 Cr/RMtoT
11 GNDA
12 ALMtoT
13 GNDA
14 ARMtoT
15 GNDA
16 GND/CVBS_GR/BTtoM
17 GND
18 GND/GTtoM
19 GND
20 CTtoM
21 GND
22 V/YTtoM
23 GND
24 ALTtoM
25 GND
26 ARTtoM
27 GND
B 2/2 CN402
CN2201
VKN2011- -TBB
CHIP SIZE
RESISTOR
: 2 1 2 5 size RS1/10S–
: 1 6 0 8 size RS1/16S–
CAPACITOR
: 2 1 2 5 size CKSQ**–
: 1 6 0 8 size CCSR**– or CKSR**–
UMF21N-TLB
C1 B2 E2
E1 B1 C2
C
B E
C1 B2 E2
E1 B1 C2

H 2/5

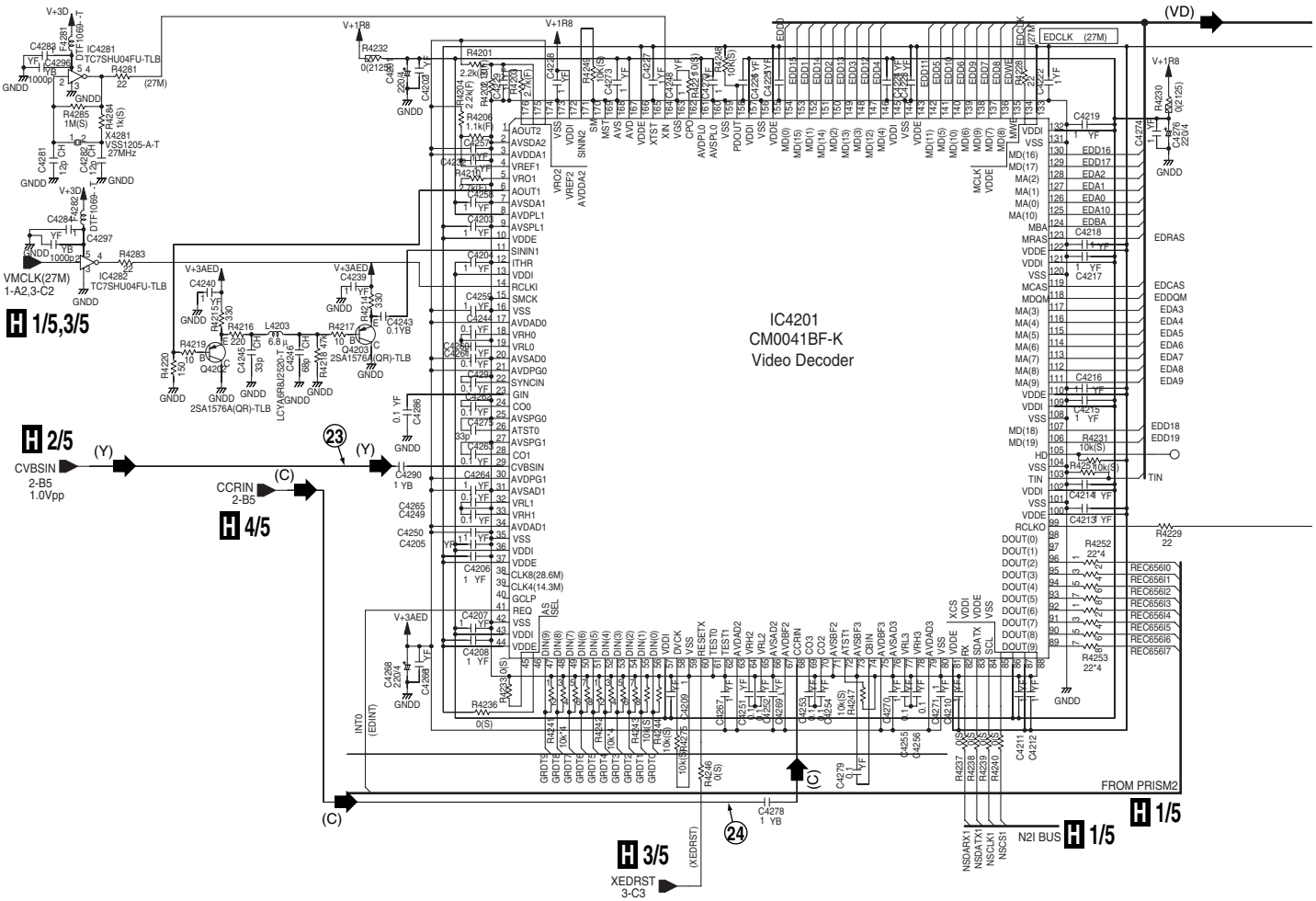
3.11 MAIN ASSY(3/5)



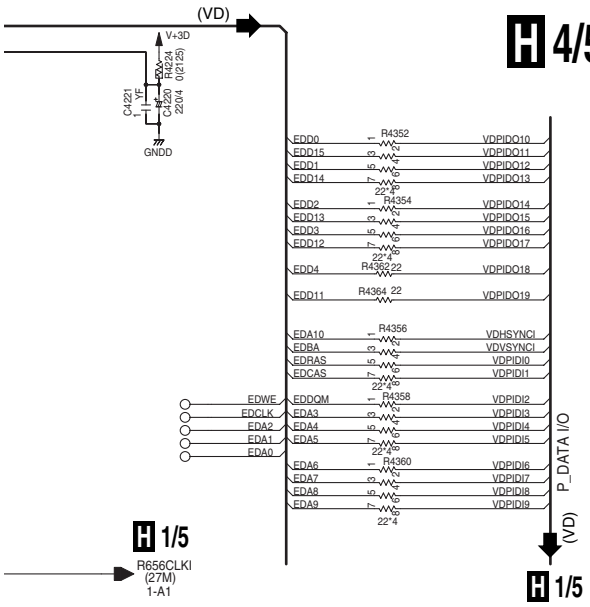
H 3/5 MAIN ASSY
(VXX2993:DVR-533H)
(VXX2993:DVR-633H)
(VXX2994:DVR-531H)

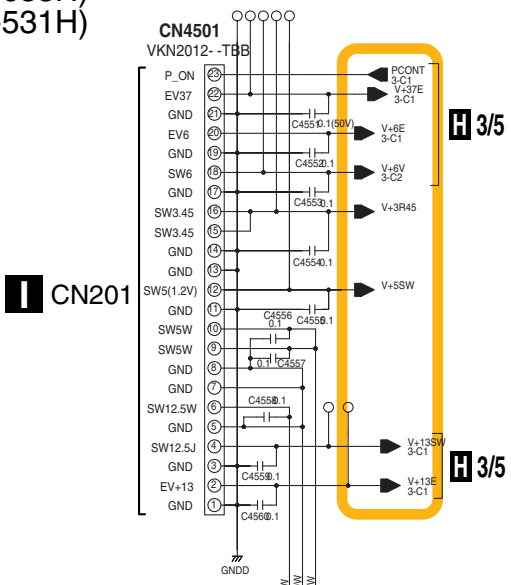


3.12 MAIN ASSY(4/5)

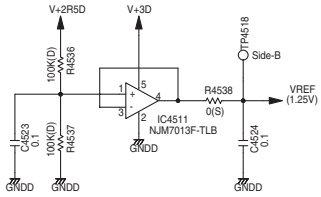


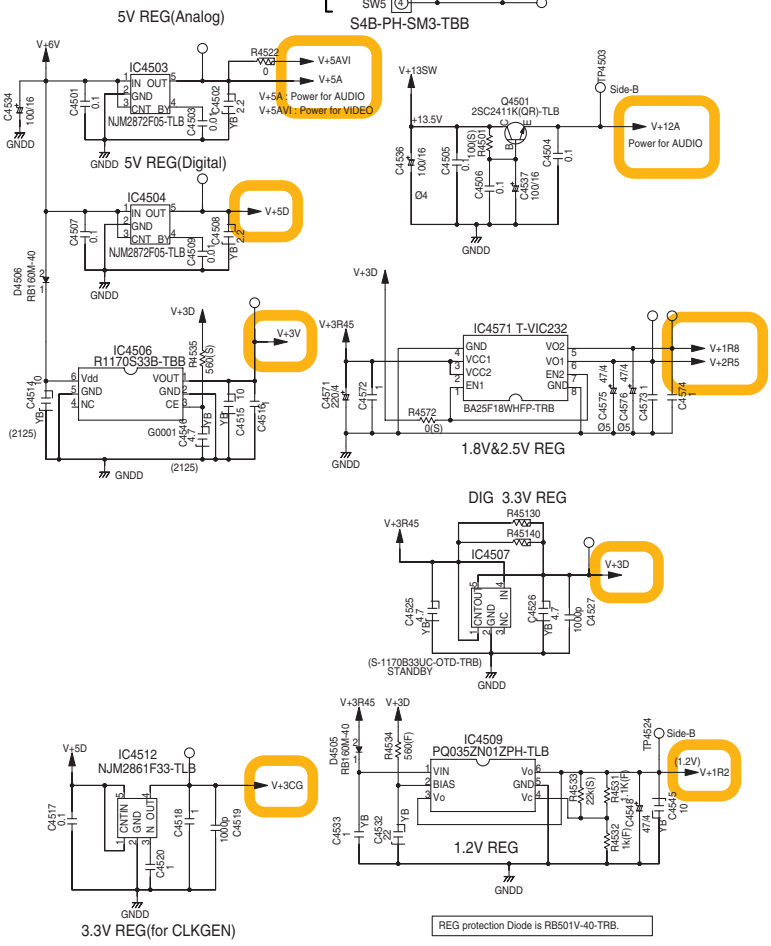
H 4/5 MAIN ASSY
(VXX2993:DVR-533H)
(VXX2993:DVR-633H)
(VXX2994:DVR-531H)





To DRIVE ASSY R9R
CN9022

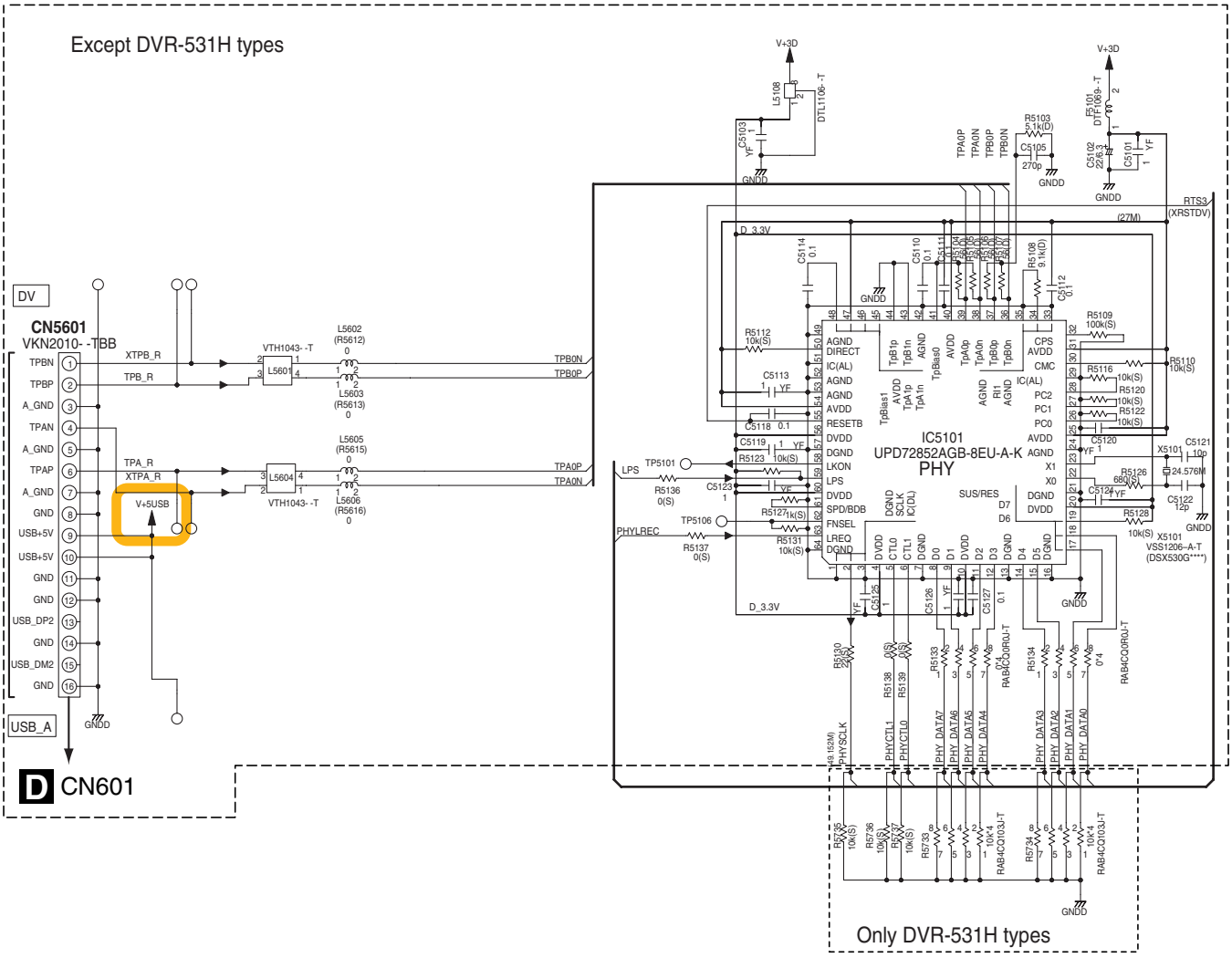




(VD) : Video Data Signal Route
(Y) : Y Video Signal Route
(C) : C Video Signal Route

3.13 MAIN ASSY(5/5)

H 5/5 MAIN ASSY
(VXX2993:DVR-533H)
(VXX2993:DVR-633H)
(VXX2994:DVR-531H)



A

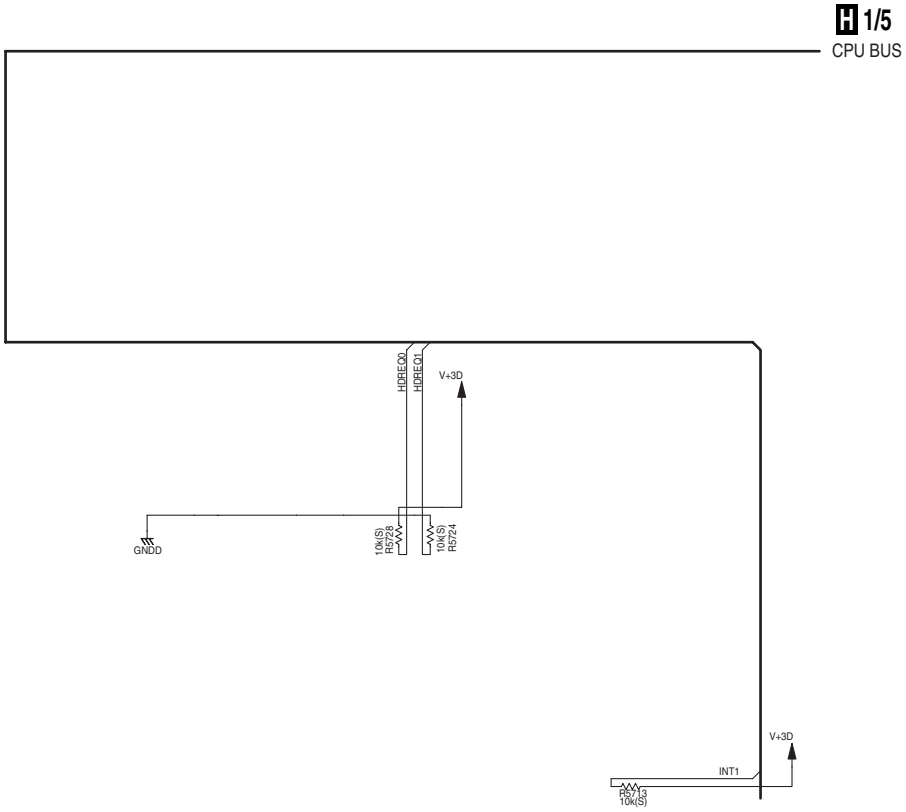
B

C

D

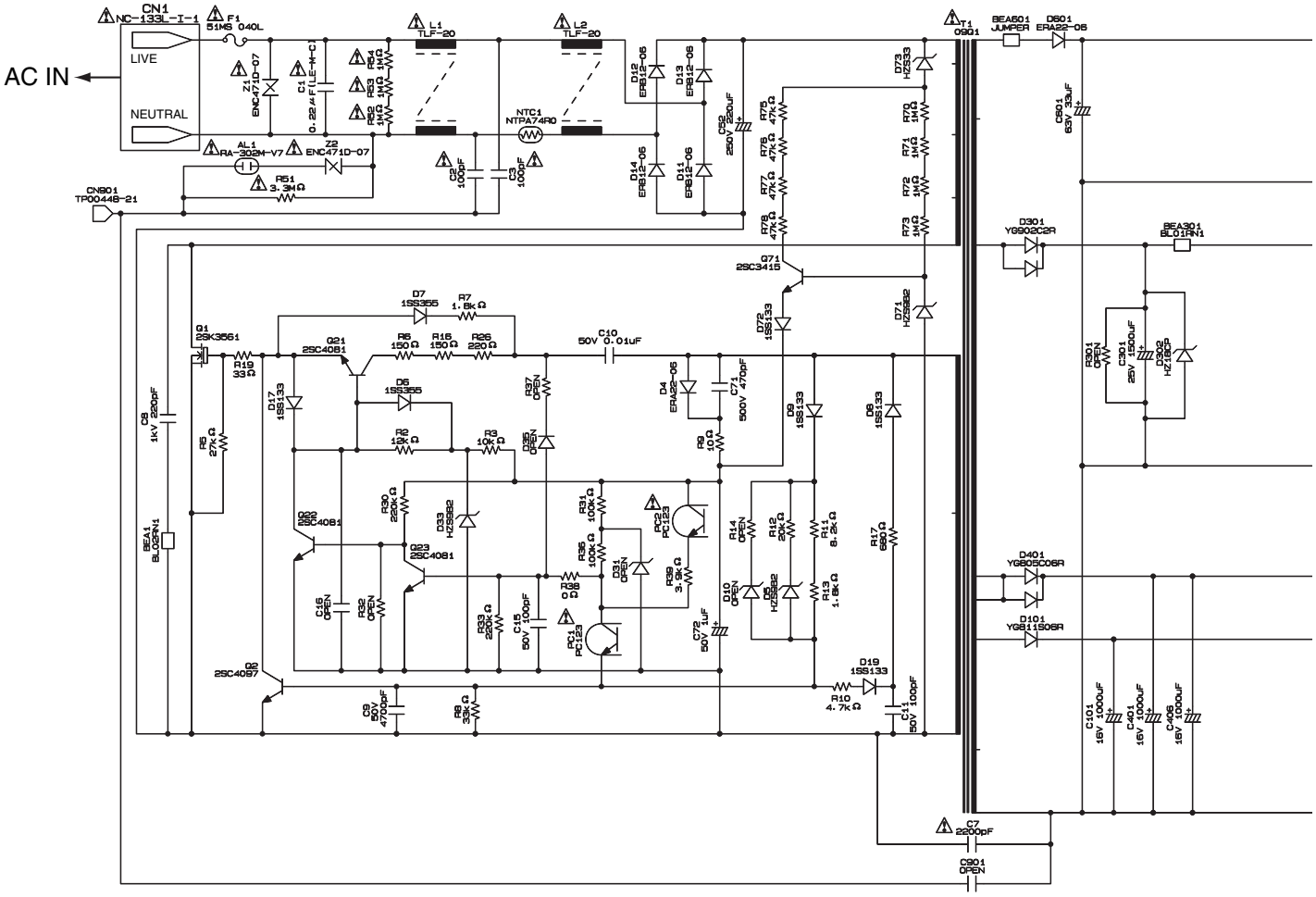
E

F


H 1/5
CPU BUS
HDREQ0
HDREQ1
V+3D
GNDD
10k(S)
RS72
10k(S)
RS724
V+3D
INT1
RS713
10k(S)

3.14 POWER SUPPLY UNIT

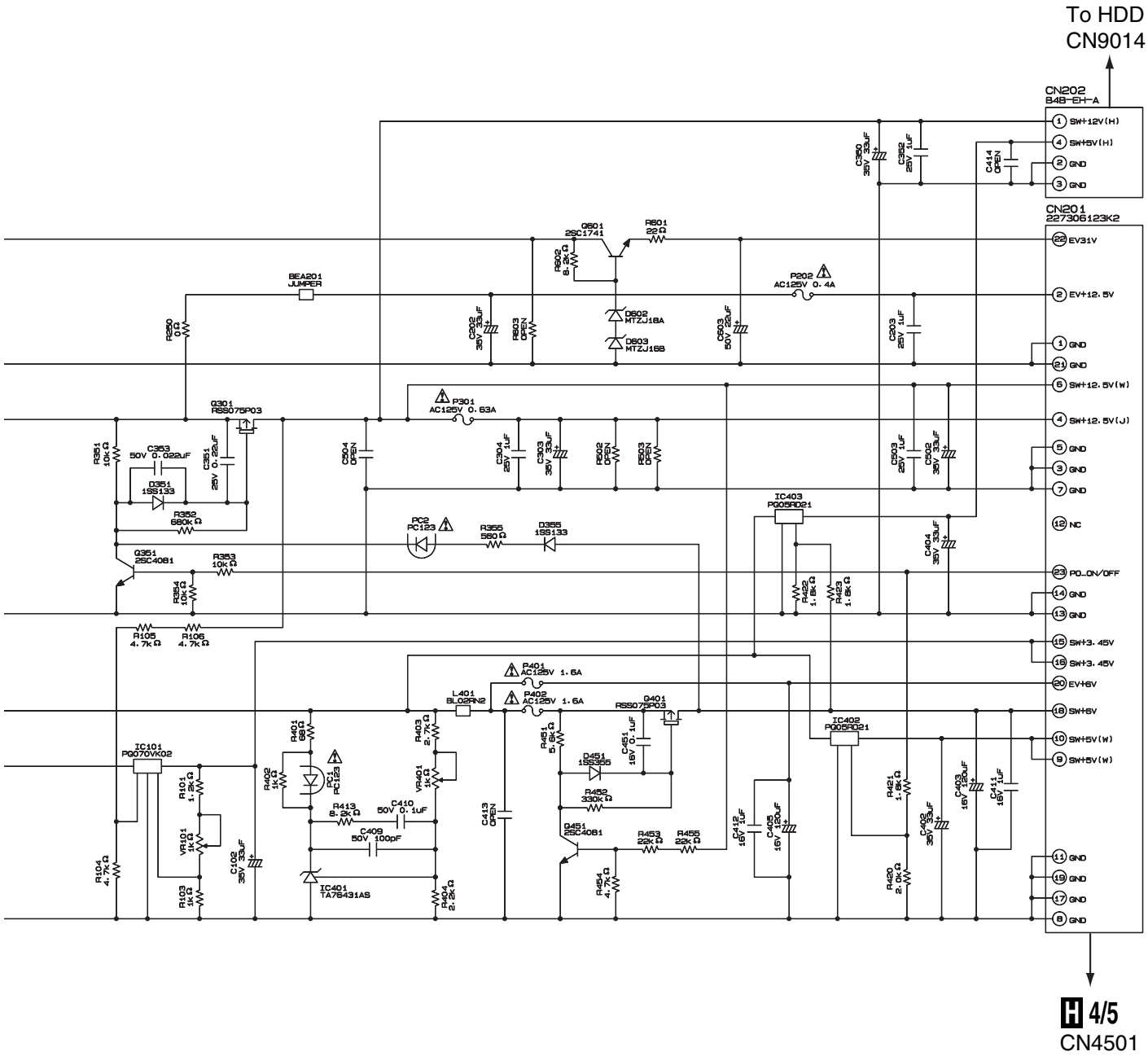
POWER SUPPLY UNIT (VWR1391)



CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491.400PF002 FOR P202 MFD, BY LITTELFUSE INC.

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491.630PF002 FOR P301 MFD, BY LITTELFUSE INC.

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.6PF002 FOR P401 and P402 MFD, BY LITTELFUSE INC.


To HDD
CN9014
CN202
B4B-EH-A
1 SW+12V(H)
4 SW+5V(H)
2 GND
3 GND
CN201
2273061123K2
22 EV31V
2 EV+12.5V
1 GND
21 GND
5 SW+12.5V(W)
4 SW+12.5V(J)
5 GND
3 GND
7 GND
12 NC
23 PO_ON/OFF
14 GND
13 GND
15 SW+3.45V
16 SW+3.45V
20 EV+6V
18 SW+5V
10 SW+5V(W)
9 SW+5V(W)
11 GND
19 GND
17 GND
8 GND
Q601 2SC1741
R601 22Ω
R602 8.2kΩ
BEA201 JUMPER
P202 AC125V 0.4A
D602 MTZJ18A
D603 MTZJ16B
R250 0Ω
C302 35V 33uF
R603 OPEN
D603 50V 22uF
C303 25V 1uF
Q301 RSS075P03
P301 AC125V 0.63A
R351 10kΩ
C353 50V 0.022uF
C351 0.22uF 25V
D351 1SS133
R352 680kΩ
C304 25V 1uF
C303 35V 33uF
R602 OPEN
R603 OPEN
C203 25V 1uF
C202 35V 33uF
IC403 PQ05RD21
C404 35V 33uF
PC2 PC123
R355 560Ω
D355 1SS133
Q351 2SC4081
R353 10kΩ
R354 10kΩ
R422 1.8kΩ
R423 1.8kΩ
R105 4.7kΩ
R106 4.7kΩ
P401 AC125V 1.6A
P402 AC125V 1.6A
L401 BL02RN2
Q401 RSS075P03
IC402 PQ05RD21
IC101 PQ070VK02
R401 68Ω
R402 1kΩ
PC1 PC123
R403 2.7kΩ
VR401 1kΩ
R451 5.6kΩ
C451 16V 0.1uF
D451 1SS355
R452 330kΩ
R101 1.2kΩ
VR101 1kΩ
R103 1kΩ
R104 4.7kΩ
C102 35V 33uF
R413 8.2kΩ
C410 50V 0.1uF
C409 50V 100pF
IC401 TA76431AS
R404 2.2kΩ
C413 OPEN
Q451 2SC4081
R453 22kΩ
R455 22kΩ
R454 4.7kΩ
C412 16V 1uF
C405 16V 330uF
R421 1.8kΩ
C403 16V 120uF
C411 16V 1uF
C402 35V 33uF
R420 2.0kΩ
H 4/5
CN4501

3.15 WAVE FORMS

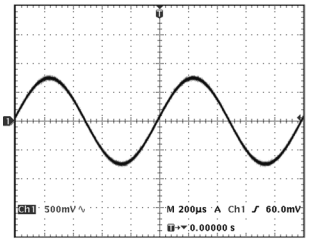
Note : The encircled numbers denote measuring point in the schematic diagram.

B JACB ASSY

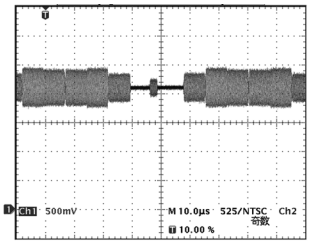
Measurement condition ;

No.1 : 1kHz, 2Vrms
No.2 : 1kHz, MONO, 60% modulation
No.3 - 5 : 75% Color-bar, (75/0/75/0)
No.6-10 : 75% Color-Bar, AXP disc 1-24 (10/0//75/0)
No.11 : 1kHz, 2Vrms, AXP disc 1-1

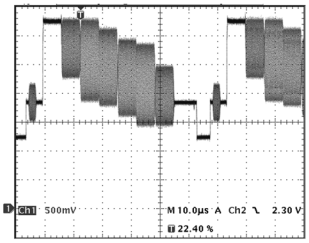
(1) IC103 - pin18, C154 + side (Audio Lch) (Function : L1)
V: 500mV/div. H: 200µsec/div.



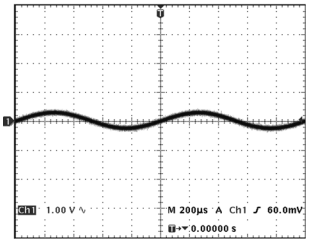
(5) IC401 - pin 31 (C) (Function : L1)
V: 500mV/div. H: 10µsec/div.



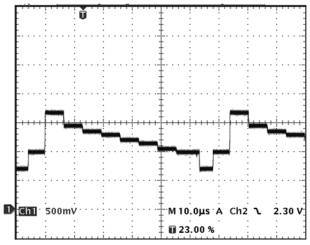
(9) IC501 - pin 33, C517 + side (CVBS) (Function : PLAY)
V: 500mV/div. H: 10µsec/div.



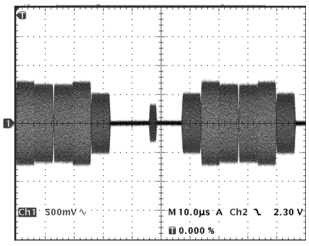
(2) IC103 - pin4, C152 – side (Audio Lch) (Function : 1ch)
V: 1V/div. H: 200µsec/div.



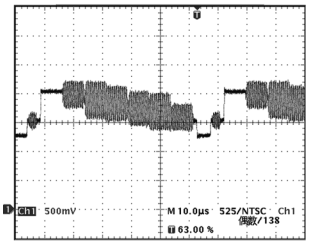
(6) IC501 - pin 8 (Y), C508 + side (Function : PLAY)
V: 500mV/div. H: 10µsec/div.



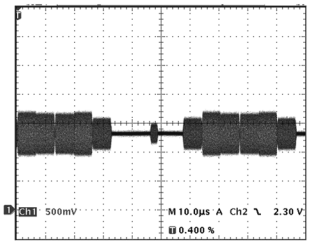
(10) JA503 - Cout (C) (Function : PLAY)
V: 500mV/div. H: 10µsec/div.



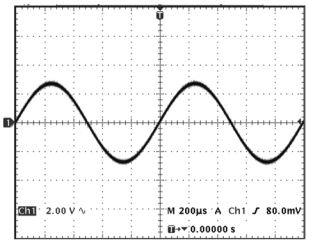
(3) UVIN, C438 + side (UVIN) (Function : 1ch)
V: 500mV/div. H: 10µsec/div.



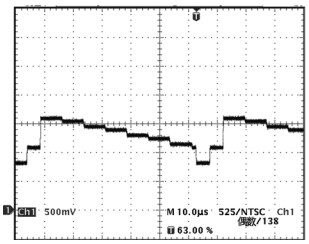
(7) IC501 - pin 6 (C), C507 + side (Function : PLAY)
V: 500mV/div. H: 10µsec/div.



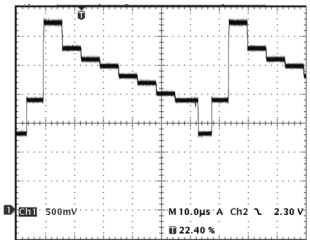
(11) CN402 - pin 16, C549 + side (Audio Lch) (Function : PLAY)
V: 2V/div. H: 200µsec/div.



(4) IC401 - pin 29 (Y) (Function : L1)
V: 500mV/div. H: 10µsec/div.

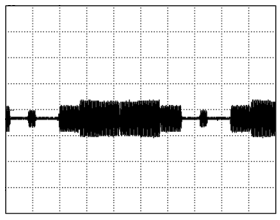


(8) IC501 - pin 28 (Y), C518 + side (Function : PLAY)
V: 500mV/div. H: 10µsec/div.

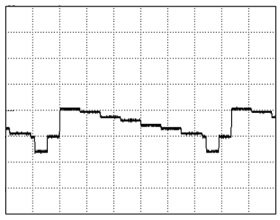


H MAIN ASSY

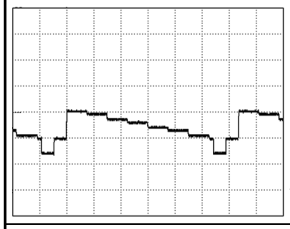
1 CN2201 - pin 26 (CMtoT)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



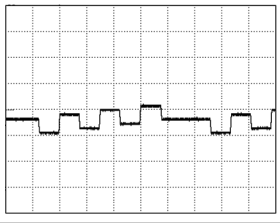
2 CN2201 - pin 24 (YMtoT)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



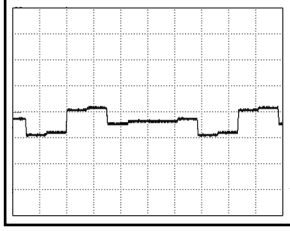
3 CN2201 - pin 22 (Y/GMtoT)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



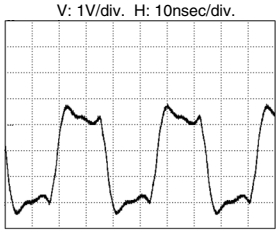
4 CN2201 - pin 20 (Cb/BMtoT)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



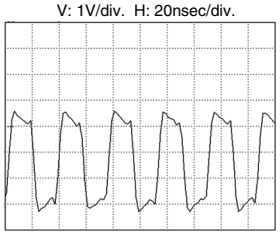
5 CN2201 - pin 18 (Cr/RMtoT)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



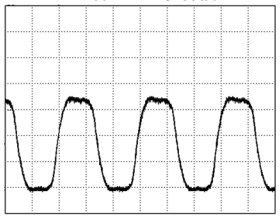
6 Foot of R3306 (VCO_VMCLK)
(State : Stopped)
V: 1V/div. H: 10nsec/div.



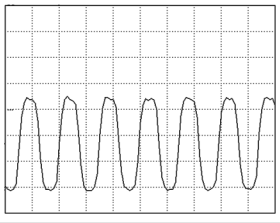
V: 1V/div. H: 20nsec/div.



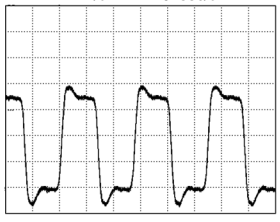
7 Foot of R3301 (VCO_AMCLK2)
(State : Stopped)
V: 1V/div. H: 10nsec/div.



V: 1V/div. H: 20nsec/div.

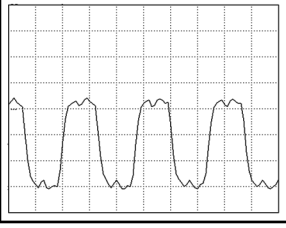


9 Foot of R3322 (VCO_AMCLK1)
(State : Stopped)
V: 1V/div. H: 10nsec/div.

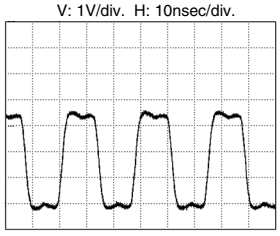


V: 1V/div. H: 20nsec/div.

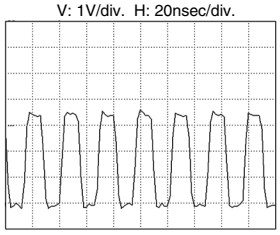
10 Foot of R3305 (VCO_18M)
(State : Stopped)
V: 1V/div. H: 20nsec/div.



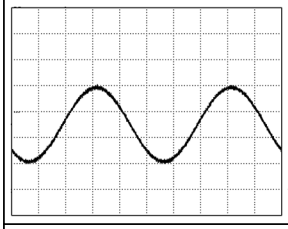
11 Foot of R3318 (VCO_33_36M)
(State : Stopped)
V: 1V/div. H: 10nsec/div.



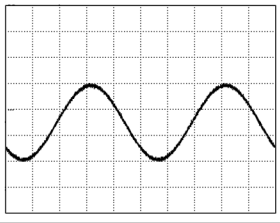
V: 1V/div. H: 20nsec/div.



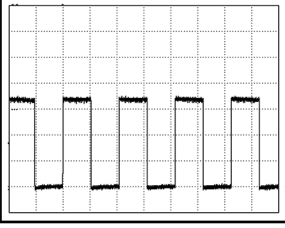
12 Foot of R3108 (LCHIN)
(State : Stopped)
V: 1V/div. H: 200µsec/div.



13 Foot of R3109 (RCHIN)
(State : Stopped)
V: 1V/div. H: 200µsec/div.

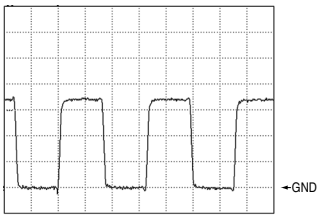


14 Foot of R3106 (AD_LRCKI)
(State : Stopped)
V: 1V/div. H: 10µsec/div.

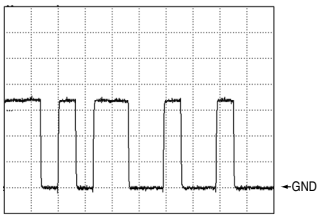


H MAIN ASSY

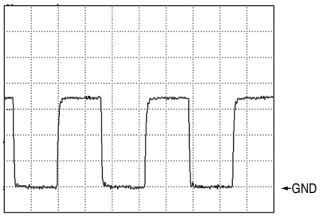
15 Foot of R3104 (AD_BCKI)
(State : Stopped)
V: 1V/div. H: 100nsec/div.



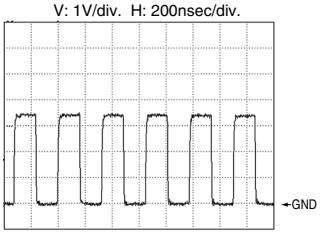
16 Foot of R3107 (AD_ADATAI)
(State : Stopped)
V: 1V/div. H: 500nsec/div.



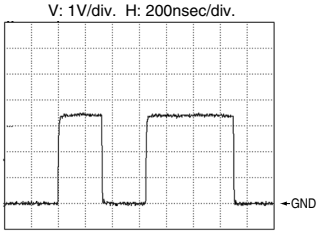
17 Foot of R3227 (DA_BCKO)
(State : Stopped)
V: 1V/div. H: 100nsec/div.



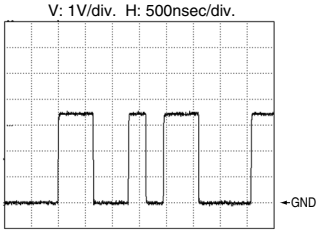
V: 1V/div. H: 200nsec/div.



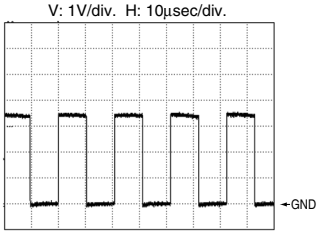
18 Foot of R3228 (DA_ADATAO)
(State : Stopped)
V: 1V/div. H: 200nsec/div.



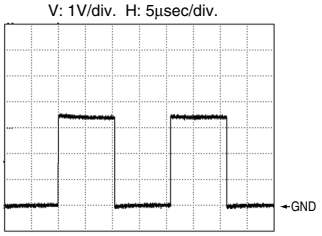
V: 1V/div. H: 500nsec/div.



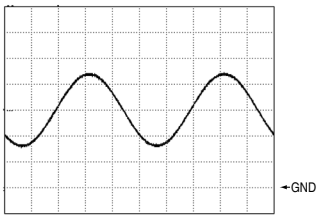
19 Foot of R3230 (DA_LRCKO)
(State : Stopped)
V: 1V/div. H: 10µsec/div.



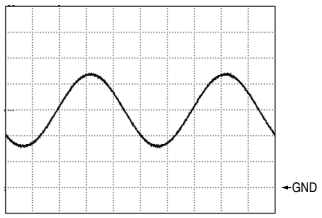
V: 1V/div. H: 5µsec/div.



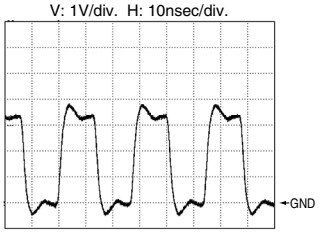
20 IC3202 - pin 7 (LCHOUT)
(State : Stopped)
V: 2V/div. H: 200µsec/div.



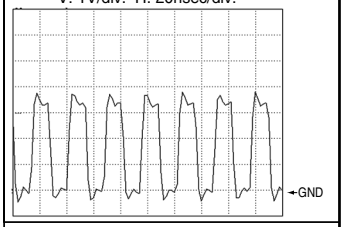
21 IC3202 - pin 1 (RCHOUT)
(State : Stopped)
V: 2V/div. H: 200µsec/div.



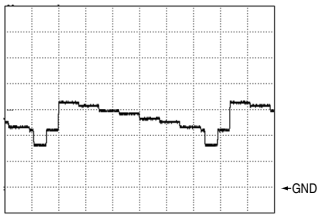
22 IC3201 - pin 16 (DA_33_36M)
(State : Stopped)
V: 1V/div. H: 10nsec/div.



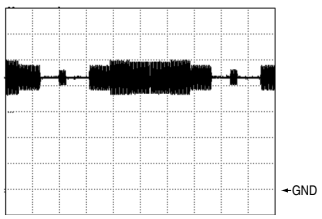
V: 1V/div. H: 20nsec/div.



23 Foot of C4290 (CVBSIN)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



24 Foot of C4278 (CCRIN)
(State : Stopped)
V: 0.5V/div. H: 10µsec/div.



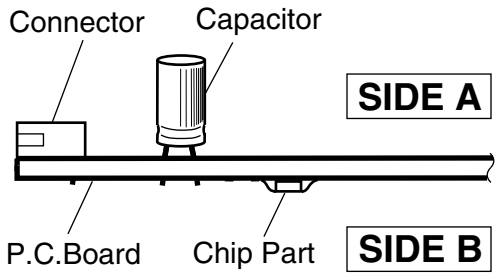
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

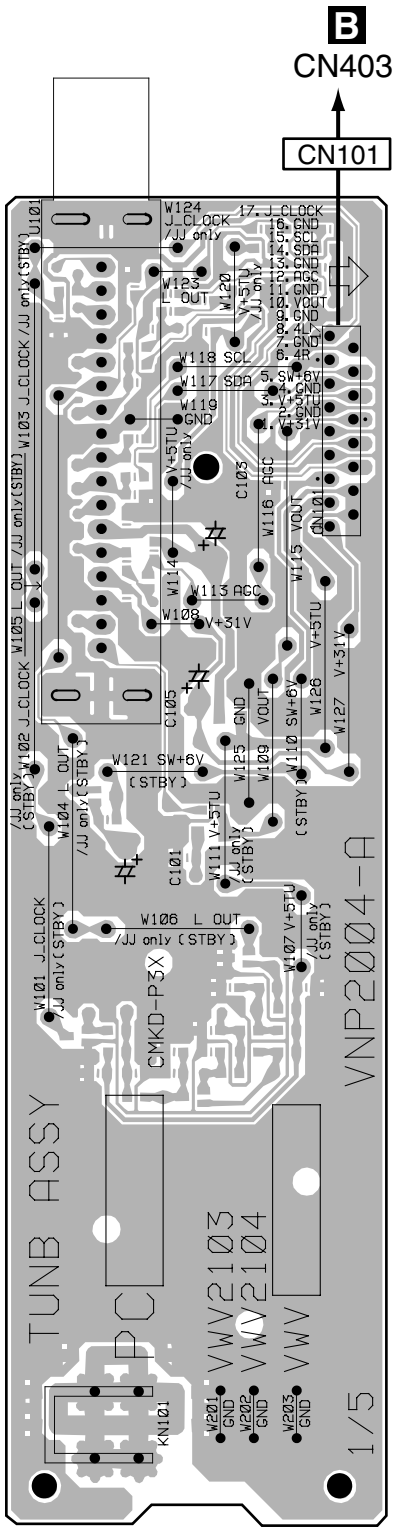
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



4.1 TUNB ASSY

SIDE A **SIDE A**

A TUNB ASSY



(VNP2004-A)

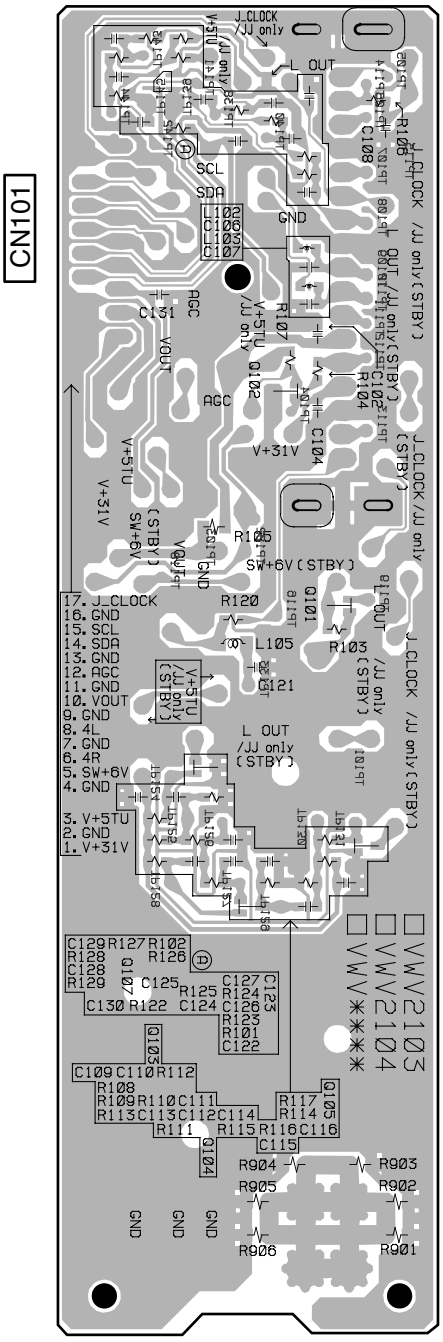
A **A**

SIDE B

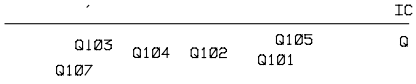
SIDE B

A B C D E F

A TUNB ASSY



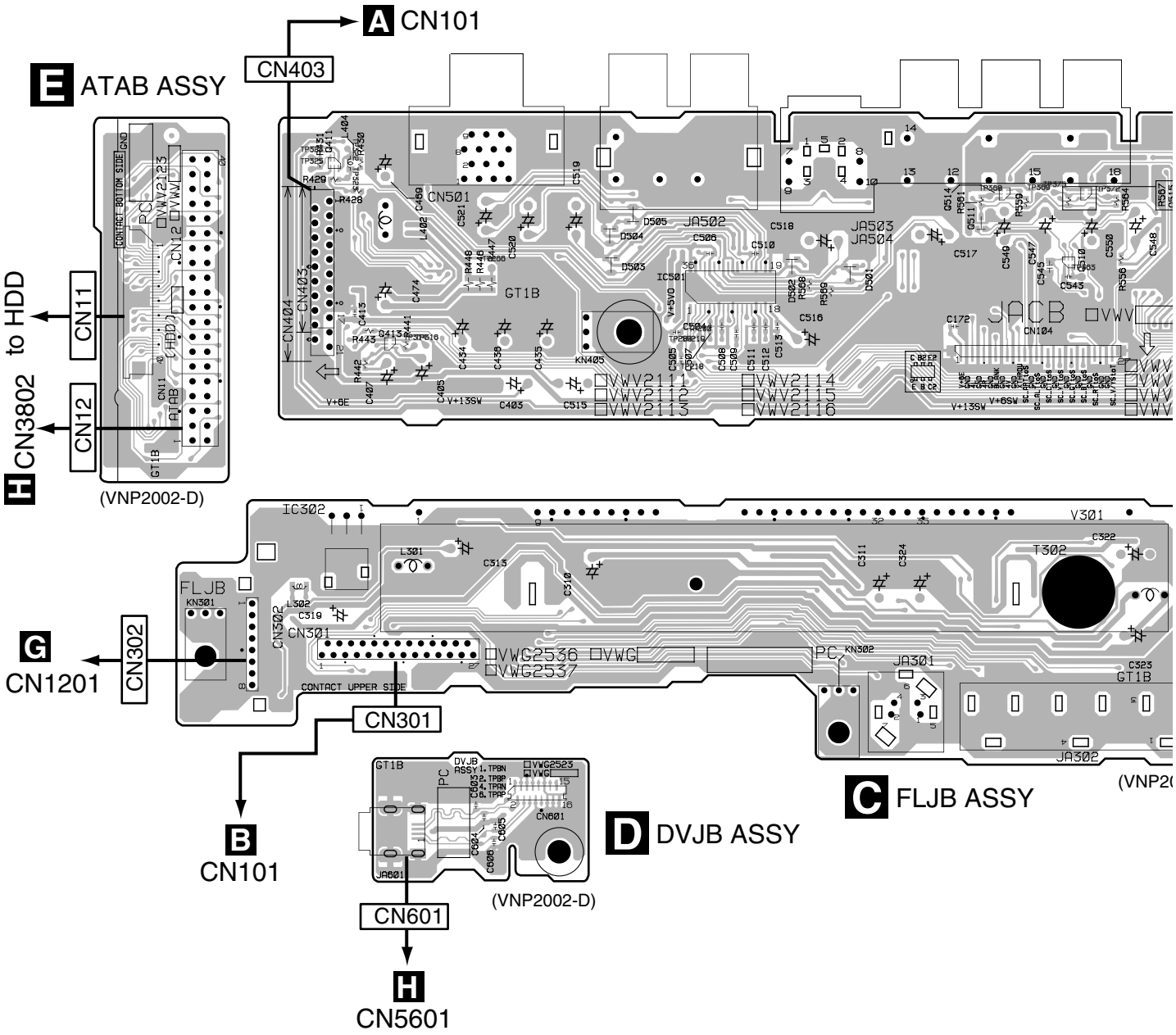
(VNP2004-A)



5 6 7 8

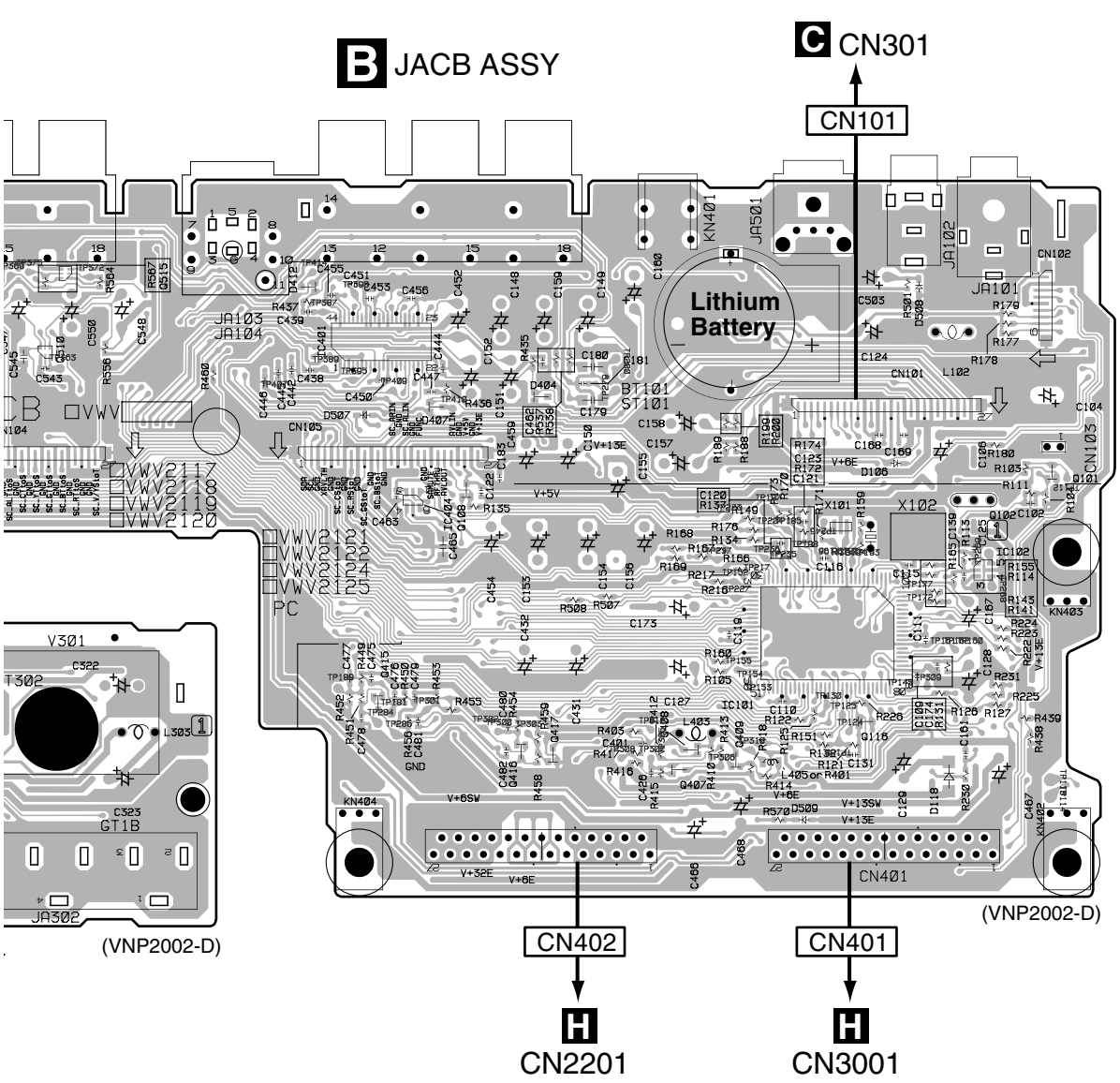
4.2 JACB, FLJB, DVJB and ATAB ASSYS

SIDE A



B C D E

SIDE A



IC | Q

Q411
Q514
Q515
Q511
IC401 IC501 Q510
Q413
Q101
IC404 Q108
IC302 IC102
Q415
IC101
Q116
Q408
Q409
Q417
Q416
Q407

SIDE B

A

B

C

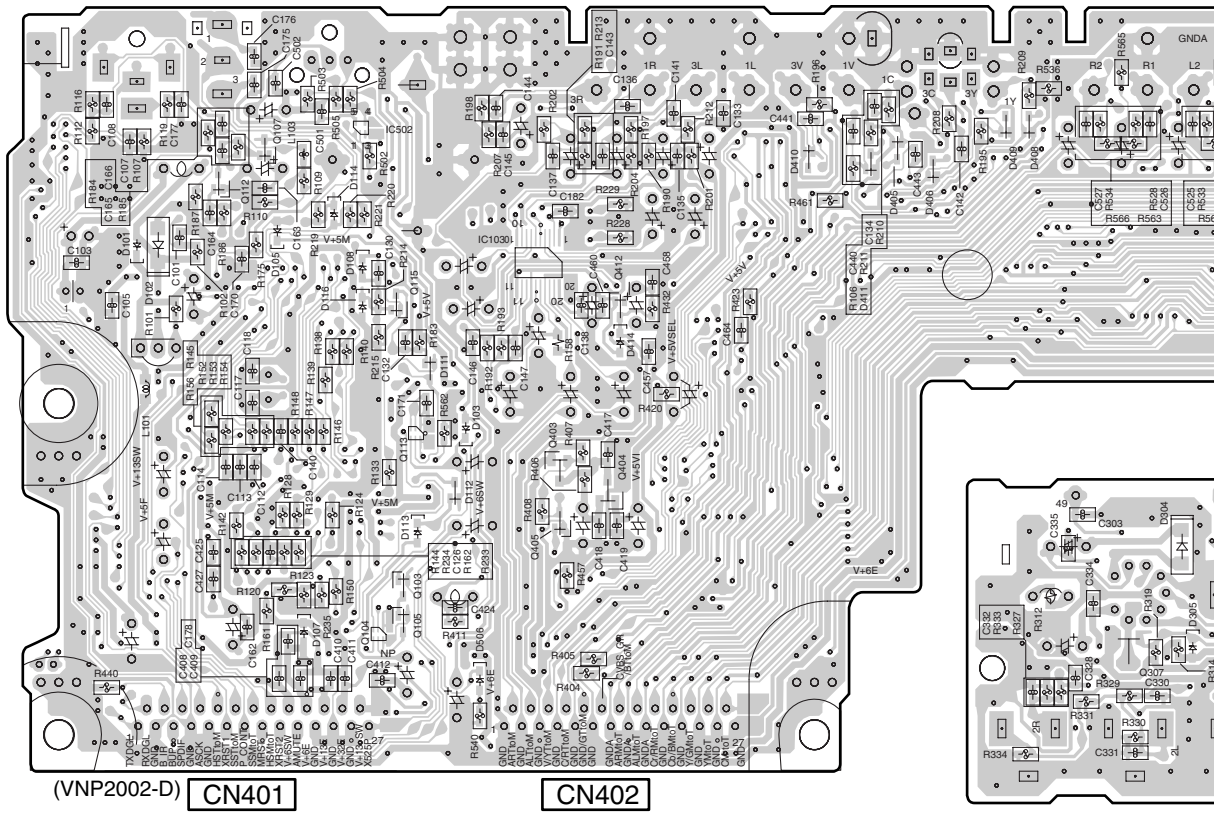
D

E

F

B JACB ASSY

IC	Q	
	Q414	
IC502	Q107	
	Q502	
	Q503	
	Q112	Q501
IC103	Q406	
	Q412	
	Q115	
	Q402	
	Q403	
IC301	Q113	
	Q404	Q308
	Q405	
	Q306	
	Q307	
	Q103	
	Q104	Q105



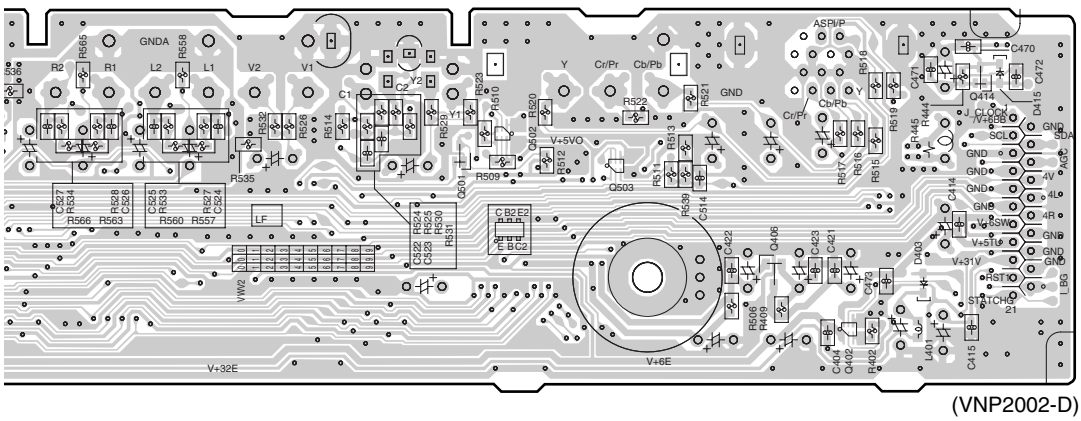
C FLJB ASSY

SIDE B

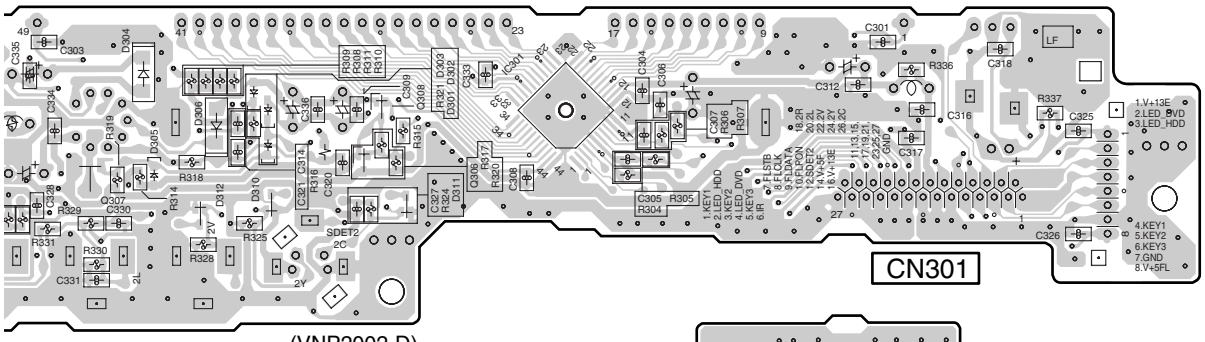
A

B

E ATAB ASSY

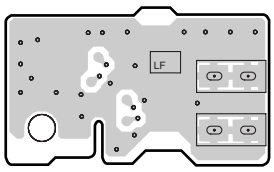


(VNP2002-D)



(VNP2002-D)

FLJB ASSY



D DVJB ASSY

(VNP2002-D)

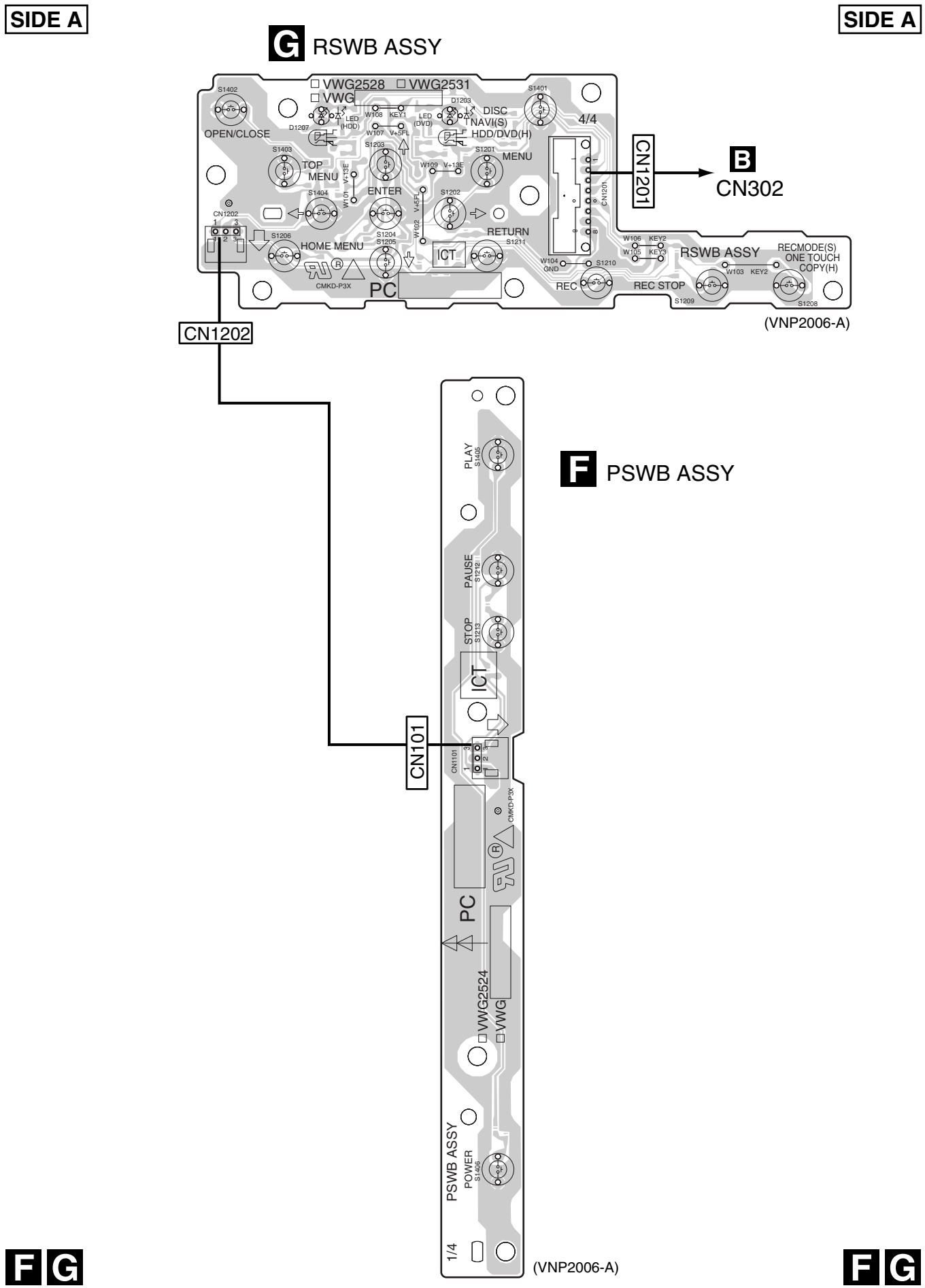
C

D

E

F

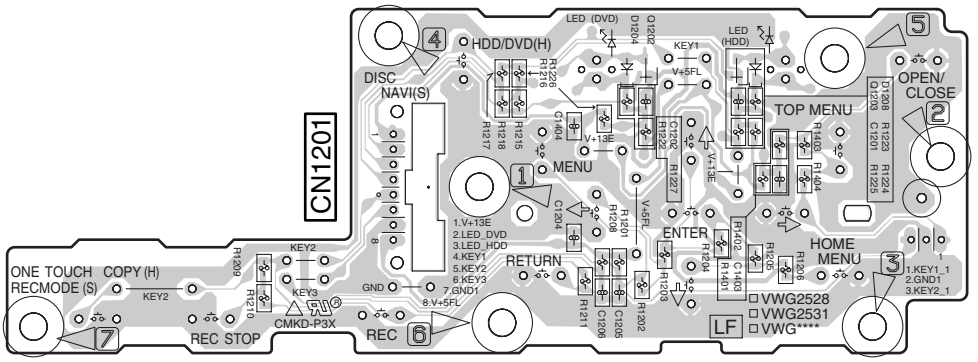
4.3 PSWB and RSWB ASSYS



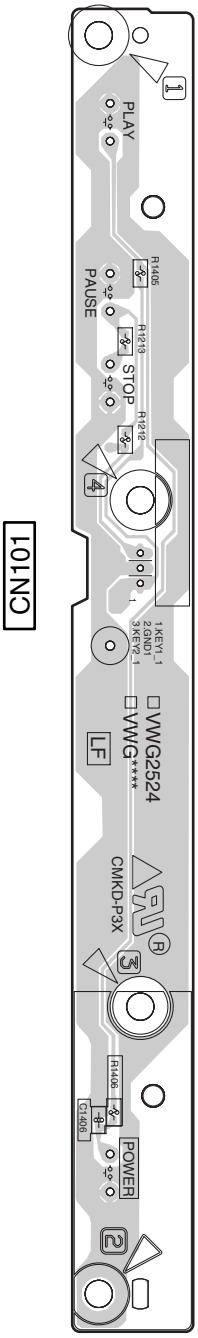
SIDE B

SIDE B

G RSWB ASSY



F PSWB ASSY



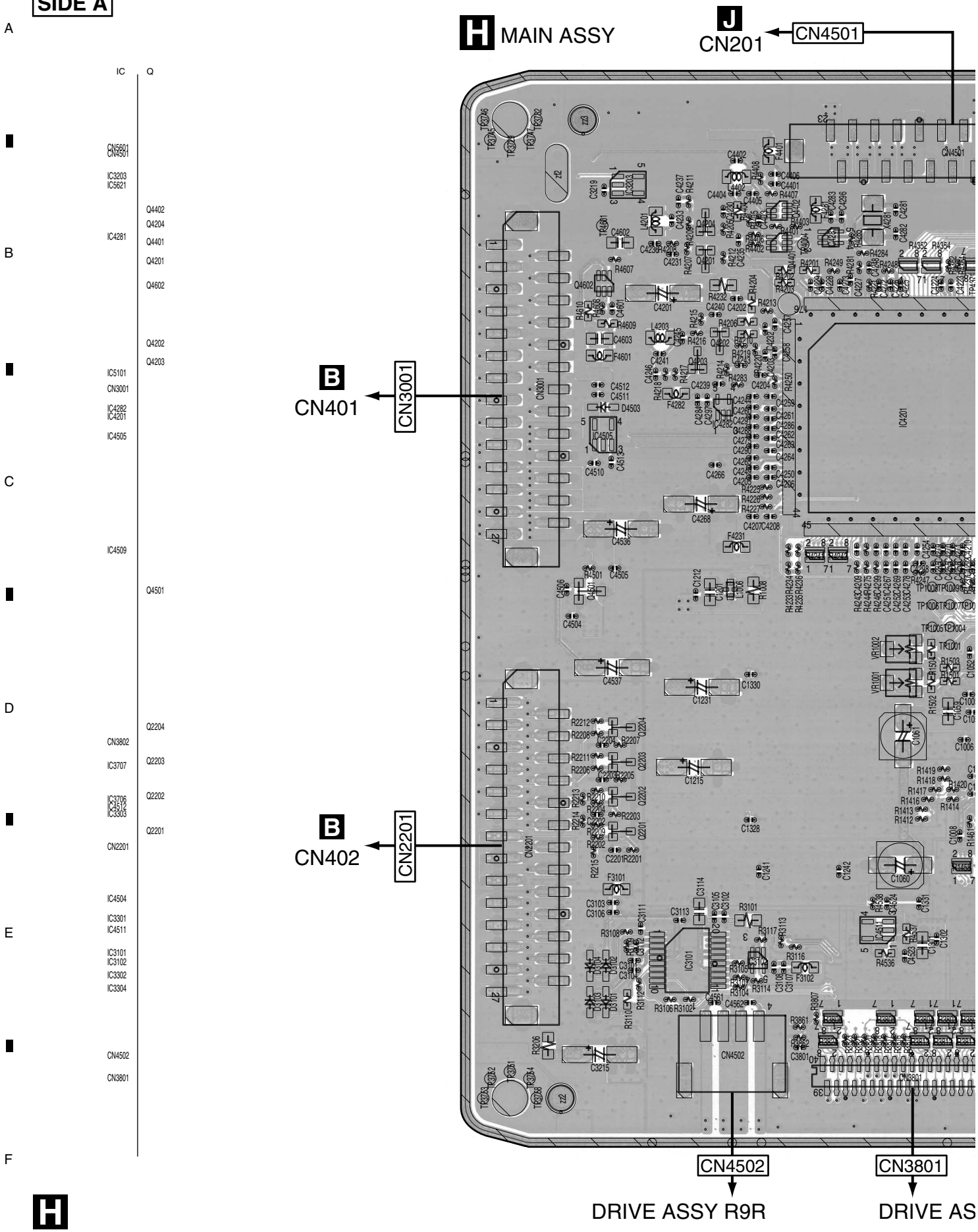
(VNP2006-A)

F G

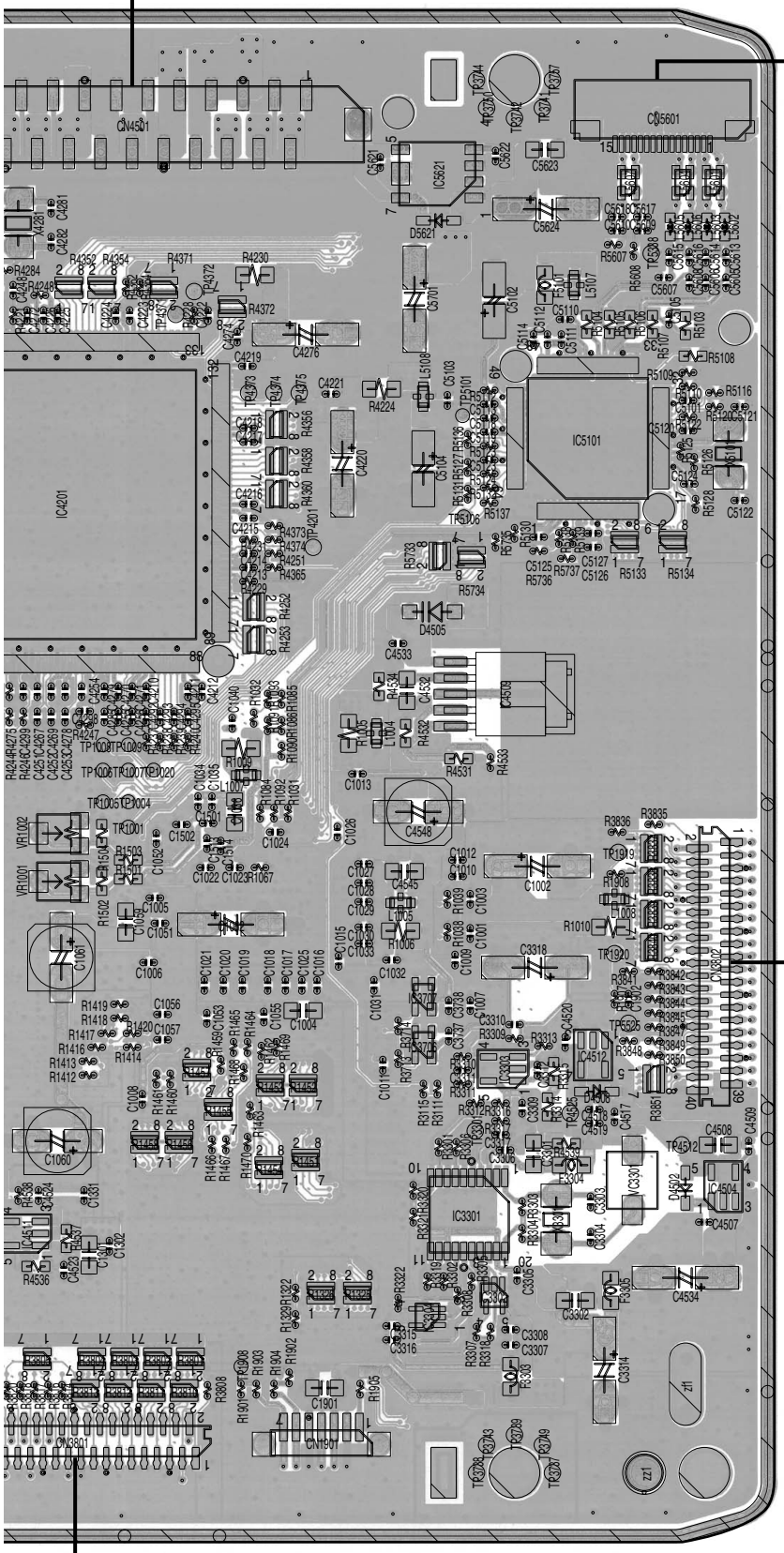
F G

4.4 MAIN ASSY

SIDE A



SIDE A

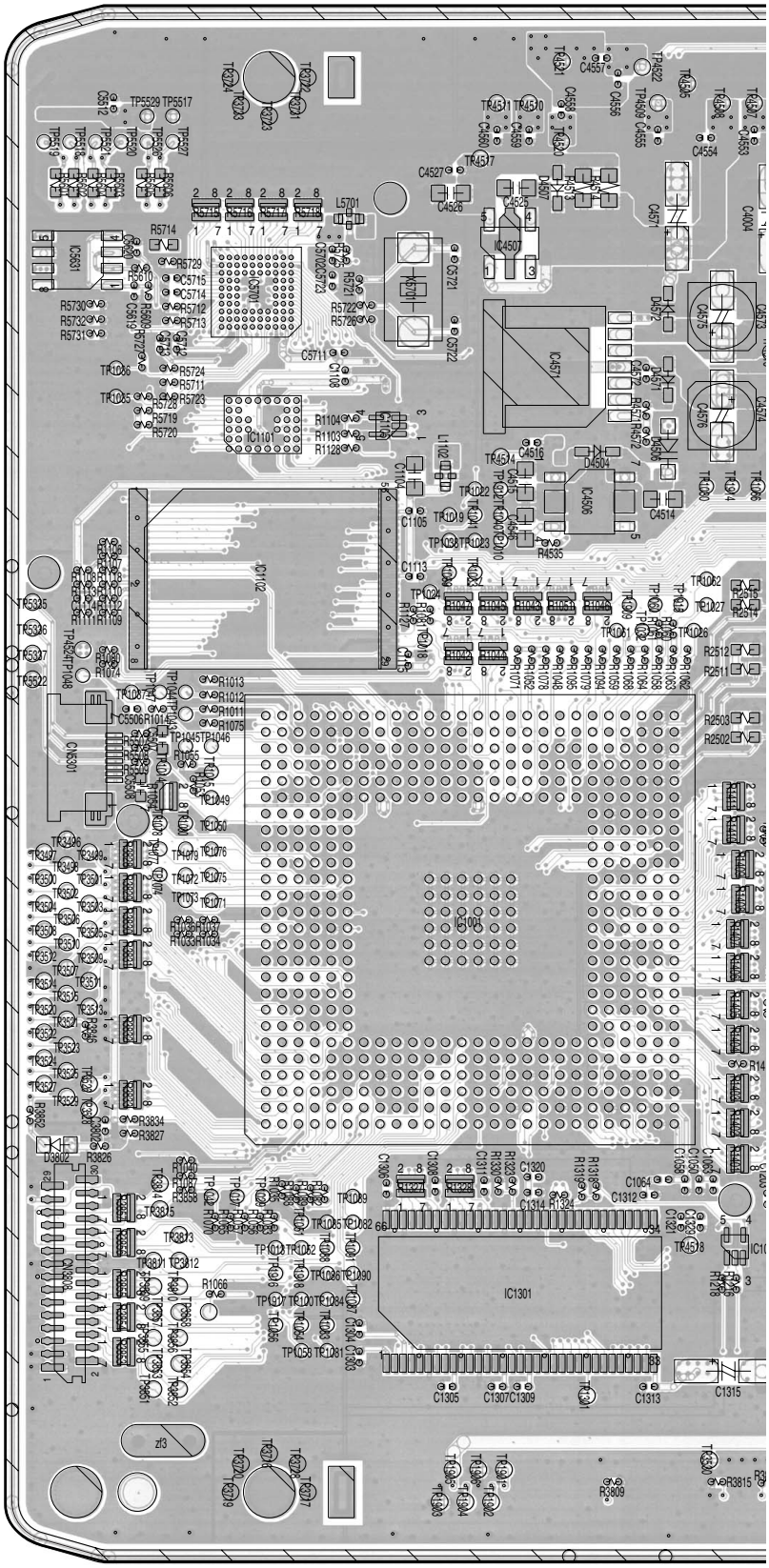


SIDE B

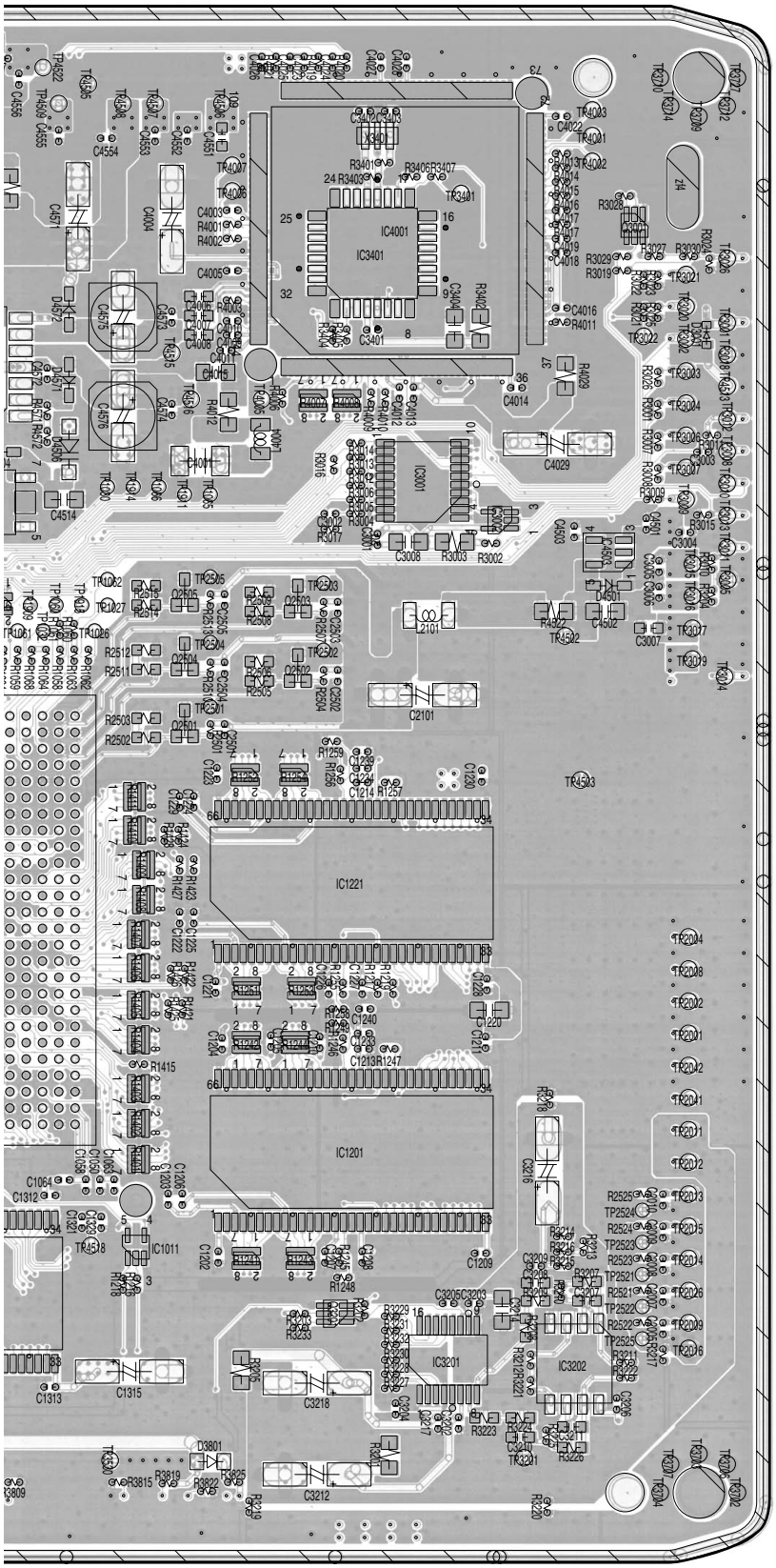
H MAIN ASSY

IC / Q

IC4001 Q3001
IC3401
IC5631
IC5701
IC4571
IC1101
IC3001
IC4506
IC3002
IC4503
IC1102 Q2505 Q2503
Q2504 Q2502
Q2501
IC1221
IC1001
IC1201
IC1011
IC1301 Q3201
IC3201
IC3202



SIDE B

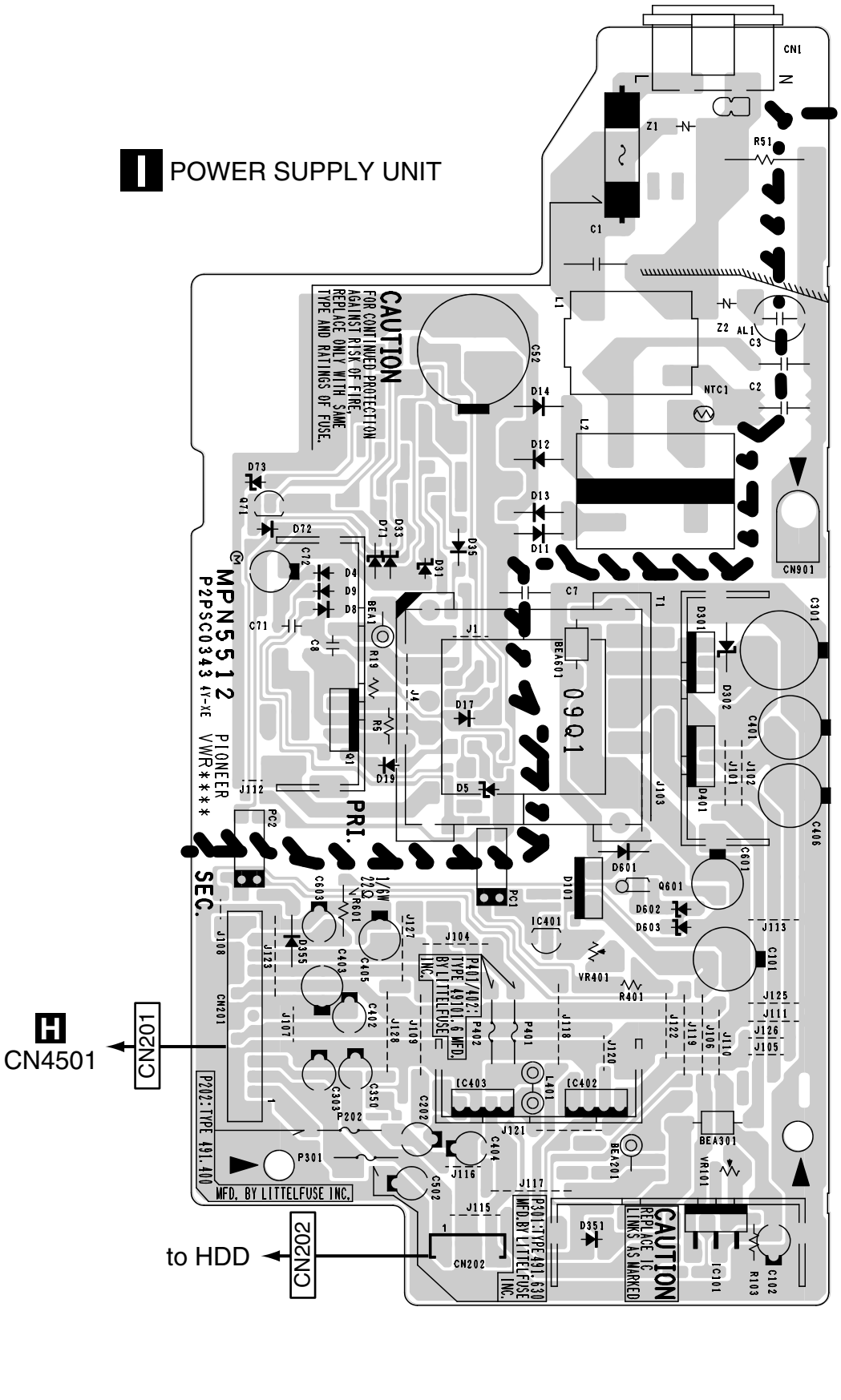


(VNP2001-D)

4.5 POWER SUPPLY UNIT

SIDE A **SIDE A**

A B C D E F



SIDE B

SIDE B

A

B

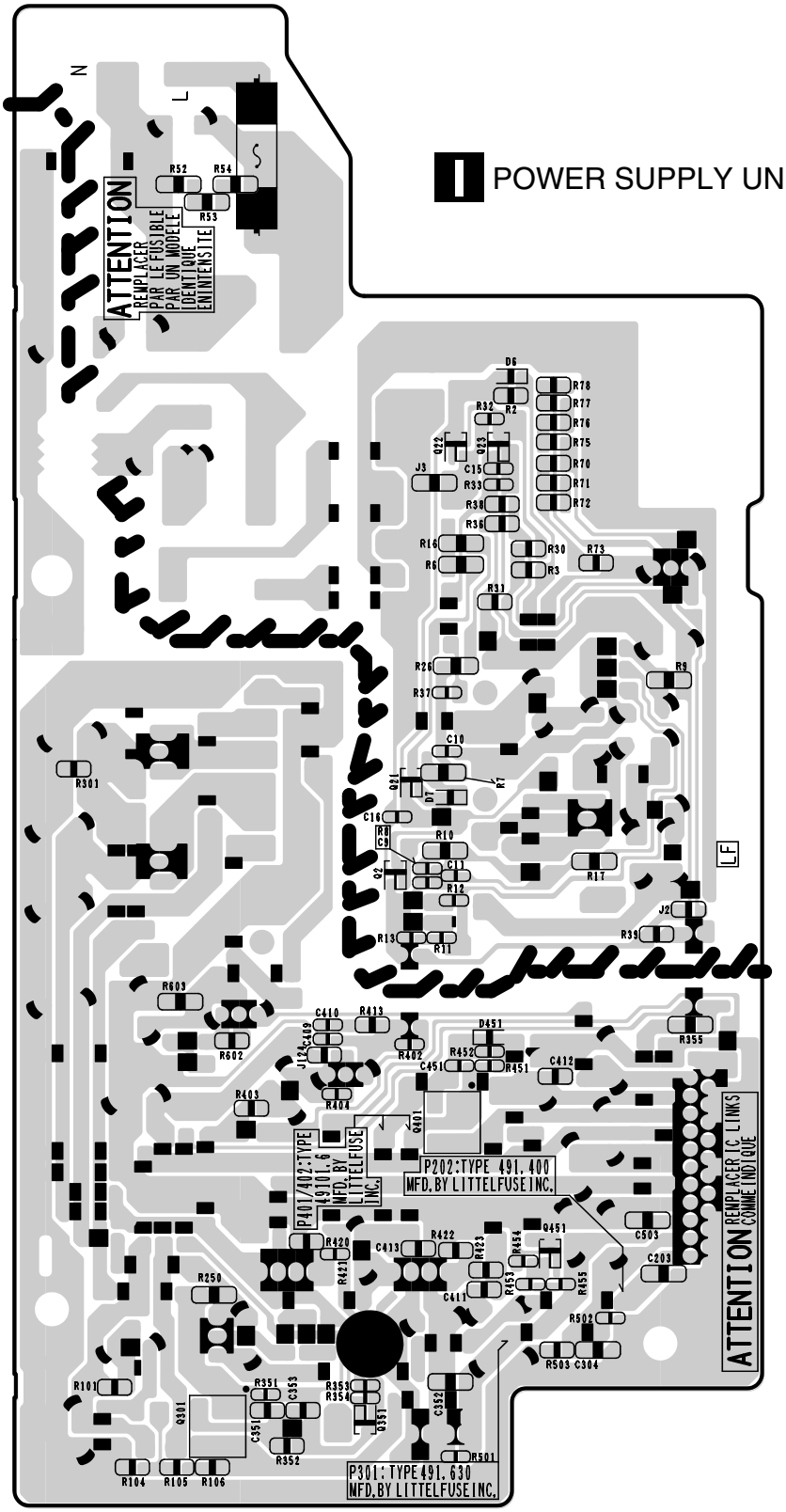
C

D

E

F

POWER SUPPLY UNIT



5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F

LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	DVR-533H-S DVR-633H-S	DVR-531H-S
	1..TUNB ASSY (for Service)	VXX3024	VXX3024
	1..JAFL ASSY (for Service)	VXX3001	VXX3002
NSP	2..JAFL ASSY	VWM2311	VWM2312
	3..DVJB ASSY	VWG2523	Not used
	3..FLJB ASSY	VWG2536	VWG2536
	3..JACB ASSY	VWV2111	VWV2112
	3..ATAB ASSY	VWV2123	VWV2123
	1..KEYB ASSY (for Service)	VXX3030	VXX3030
NSP	2..KEYB ASSY	VWM2330	VWM2330
	3..PSWB ASSY	VWG2424	VWG2524
	3..RSWB ASSY	VWG2528	VWG2528
	1..MAIN ASSY (for Service)	VXX2993	VXX2994
⚠	1..POWER SUPPLY UNIT	VWR1391	VWR1391

B JACB ASSY

VWV2111 and VWV2112 are constructed the same except for the following :

Mark	Symbol and Description	VWV2111	VWV2112
	R170	Not used	RS1/16S393J
	R172	RS1/16S0R0J	RS1/16S682J

Mark	No.	Description	Part No.
A		**TUNB ASSY**	
		SEMICONDUCTORS	
	Q102		2SA1576A
		COILS AND FILTERS	
	L102, L103		VTL1081
		CAPACITORS	
	C106, C107		CCSRCH390J50
	C102		CKSRYB222K50
	C122, C123		CKSRYB472K50
	C104		CKSRYF104Z50
		RESISTORS	
	R105		RS1/10S0R0J
	Other Resistors		RS1/16S###J
		OTHERS	
	U101	TV TUNER PACK	VXF1059
	KN101	SCREW PLATE	VNE1948
	CN101	17P CONNECTOR	XKP3079

Mark	No.	Description	Part No.
B		**JACB ASSY(533H/633H)**	
		SEMICONDUCTORS	
	IC103		BD3823FV
	IC102		BD4846G
	IC401		LA73031V
	IC501		LA73054
	IC101		PMC002A8
⚠	Q403		2SA1036K
	Q107		2SA1576A
	Q102		2SB1238X
	Q404, Q406		2SC2411K
	Q101, Q112, Q412		2SC4081
	Q511		DTA124EUA
	Q115, Q405		DTC124EUA
	Q514, Q515		HN1C03FU
	Q503, Q510		UMD2N
	Q402		UMF21N
	Q413		UMF23N
	D102, D118		1SR154-400

Mark No.	Description	Part No.
	D105	1SS352
	D107, D108, D114, D116, D403	1SS355
	D414, D506, D507, D509	1SS355
	D508	UDZS5R1(B)
	D404-D412	UMZ6R8N
	COILS AND FILTERS	
	L401	CTF1399
	L101	LCYA100J2520
	L405	LCYA101J2520
	L102	LTA102J
	L103	VTL1081
	CAPACITORS	
	C118	CCSRCH100D50
	C108, C164-C166, C177	CCSRCH101J50
	C117	CCSRCH150J50
	C401	CCSRCH181J50
	C102	CCSRCH221J50
	C140	CCSRCH331J50
	C427	CCSRCH471J50
	C175	CCSRCH681J50
	C153, C154, C156	CEAL100M50
	C155, C431	CEAL101M10
	C104	CEAL101M16
	C432	CEAL101M6R3
	C167	CEAL220M6R3
	C129	CEAL221M10
	C128	CEAL2R2M50
	C148, C149, C151, C152	CEAT100M50
	C157-C160, C405, C407	CEAT100M50
	C124, C403, C434, C436, C503	CEAT101M10
	C515, C516	CEAT101M10
	C150, C459, C547	CEAT101M16
	C435	CEAT101M6R3
	C474, C517-C519	CEAT102M6R3
	C548	CEAT221M6R3
	C106	CEAT471M16
	C452, C520, C521	CEAT471M6R3
	C134, C142, C462	CKSRYB103K50
	C438-C447, C507-C509	CKSRYB104K16
	C511, C512	CKSRYB104K16
	C130	CKSRYB105K6R3
	C103, C105, C109-C111, C116	CKSRYF104Z25
	C119, C125, C132, C138, C139	CKSRYF104Z25
	C163, C168-C170, C176, C178	CKSRYF104Z25
	C181, C182, C408-C410, C412	CKSRYF104Z25
	C414, C417-C419, C421-C423	CKSRYF104Z25
	C450, C453, C455-C458, C460	CKSRYF104Z25
	C502, C504-C506, C510	CKSRYF104Z25
	C513, C514, C522, C523	CKSRYF104Z25
	C411, C415	CKSRYF104Z50
	C425	CKSRYF105Z10
	C549, C550 (47/16)	VCH1241
	RESISTORS	
	R445	RS1/10S0R0J
	R446, R447	RS1/10S120J
	R158	RS1/10S330J
	R448	RS1/10S8R2J
	R195, R196, R208-R211	RS1/16S75R0F

Mark No.	Description	Part No.
	R435-R437, R520-R523	RS1/16S75R0F
	R525, R526, R529, R530, R532	RS1/16S75R0F
	Other Resistors	RS1/16S###J
	OTHERS	
	X101 CERAMIC (15MHz)	CSS1666
	X102 CRYSTAL (32.768kHz)	VSS1197
	JA101 MINI JACK(4P)	AKN1073
	CN103 CONNECTOR POST	B2B-PH-K
	JA102 JACK	RKN1004
	BT101 LITHIUM BATTERY	VEM1033
	JA103 JACK	VKB1183
	JA503 JACK	VKB1184
	JA502 3P PIN JACK	VKB1222
	CN102 9P CONNECTOR	VKN1413
	CN101 17P SOCKET	VKN1431
	CN401, CN402 CONNECTOR	VKN2008
	JA501 OPT. LINK OUT 12MB/S	VKS1001
	KN401 SCREW PLATE	VNE1948
	KN403-KN405 WRAPPING TERMINAL	VNF1084
	CN403 17P PLUG	XKP3068

C FLJB ASSY

	SEMICONDUCTORS	
	IC301	PT6315
	Q306	2SA1576A
	Q308	2SC4081
	Q307	2SC5712
	D305	1SS355
⚠	D304, D306	RF101L2S
	D302	UDZS13(B)
	D301	UDZS15(B)
	D303	UDZS2R4(B)
	D310-D312	UMZ6R8N
	COILS AND FILTERS	
	L301, L303	LAU220J
	TRANSFORMERS	
⚠	T302	VTT1166
	CAPACITORS	
	C331, C332	CCSRCH471J50
	C324	CEAL100M50
	C313	CEAL101M10
	C322, C323	CEAL101M16
	C319	CEAT101M10
	C301, C303, C321	CKSRYB103K50
	C320	CKSRYB223K50
	C304, C308, C312, C316-C318	CKSRYF104Z25
	C325, C326, C334, C335	CKSRYF104Z25
	C333, C336	CKSRYF104Z50
	RESISTORS	
	R316	RS1/10S221J
	Other Resistors	RS1/16S###J
	OTHERS	
	IC302 REMOTE RECEIVER UNIT	RPM7140-H4
	V301 FL TUBE	VAW1085
	JA302 3PIN JACK(VERTICAL)	VKB1189
	JA301 YC CONNECTOR(VERTI)	VKB1190

Mark No.	Description	Part No.
	CN302 8P CONNECTOR	VKM1001
	CN301 27P CONNECTOR	VKN2014
	KN301, KN302 WRAPPING TERMINAL	VNF1084
	0 FL HOLDER (FE)	VNF1130

D DVJB ASSY

OTHERS

	JA601 1394-TERMINAL	VKN1800
	CN601 16P CONNECTOR	VKN2013

E ATAB ASSY

OTHERS

	CN12 40P ATA CONECTOR	VKN1816
	CN11 40P CONNECTOR	VKN2009

F PSWB ASSY

SWITCHES AND RELAYS

	S1212, S1213, S1405, S1406	VSG1024

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	CN1101 CONNECTOR POST	S3B-PH-K

G RSWB ASSY

SEMICONDUCTORS

	Q1202, Q1203	DTC124EUA

SWITCHES AND RELAYS

	S1201-S1206, S1208-S1211	VSG1024
	S1401-S1404	VSG1024

CAPACITORS

	C1201, C1202, C1204-C1206	CKSRYF104Z25
	C1403, C1404	CKSRYF104Z25

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	CN1202 CONNECTOR POST	S3B-PH-K
	D1207 LED(BLUE)	SLR-343BBT
	D1203 LED(ORANGE)	SLR-343DC
	CN1201 CONNECTOR	VKP2355

H MAIN ASSY (533H/633H_DV Model)

SEMICONDUCTORS

⚠	IC4571	BA25F18WHFP
	IC3203	BD4850G
	IC3707	BU4809F
	IC3706	BU4828F
	IC4201	CM0041BF
	IC3301	CY244ZXC-04D
	IC1201, IC1221	EDD1216AATA-6B-E
	IC1301	K4H511638B-UCB3
⚠	IC4512	NJM2861F33
⚠	IC4503, IC4504	NJM2872F05
	IC3303, IC4511	NJU7013F
	IC3201	PCM1742KE
	IC3101	PCM1802DB1
	IC3401	PDF014A
⚠	IC4509	PQ035ZN01ZPH
⚠	IC4506	R1170S331B
	IC1001	R8A34011BG
	IC3001	TC74LCX541FTS1
	IC3304	TC7SAU04FU
	IC1011, IC3002	TC7SH08FUS1
	IC4281, IC4282	TC7SHU04FUS1
	IC3202	UPC4570G2-A
	IC5101	UPD72852AGB-8EU-A
	IC1102	VYW2309
	Q2501-Q2505, Q4202, Q4203	2SA1576A
	Q4501	2SC2411K
	Q3001	HN1C01FU
	Q3201	RN1903
	D3101-D3104	1SS355
	D4505, D4506	RB160M-40

COILS AND FILTERS

	F3101, F3303-F3305, F4231	DTF1069
	F4281, F4282, F5101	DTF1069
	L1004-L1008, L1102, L5108	DTL1106
	L4203	LCYA6R8J2520
	L5601, L5604	VTH1043
	L2101	VTL1067

CAPACITORS

	C3207, C3211	CCSRCH121J50
	C3208, C3210	CCSRCH681J50
	C5121	CCSSCH100D50
	C4281, C4282, C5122	CCSSCH120J50
	C4245, C4275	CCSSCH330J50
	C4246	CCSSCH680J50
	C3303, C3304	CCSSCJ3R0C50
	C3215, C3216, C4534, C4536, C4537	CEVW101M16
	C2101, C3212, C3218	CEVW101M6R3
	C5102	CEVW220M6R3
	C1002, C1062, C1231, C1315, C3314	CEVW221M4
	C4201, C4220, C4268, C4276, C4571	CEVW221M4
	C3318	CEVWNP470M10
	C1004, C1036, C1059, C1104, C1201	CKSQYB106K6R3
	C1220, C1301, C3008, C3214	CKSQYB106K6R3
	C3301, C3302, C3404, C4514, C4515	CKSQYB106K6R3
	C4545	CKSQYB106K6R3
	C1901, C4502, C4508	CKSQYB225K10
	C4525, C4526, C4546	CKSQYB475K6R3
	C3007, C4551	CKSRYF104Z50
	C1003, C1012, C1020, C1023, C1025	CKSSYB102K50
	C1040, C1051, C1207, C1209, C1210	CKSSYB102K50
	C1226, C1228, C1229, C1307, C1311	CKSSYB102K50
	C1313, C4296, C4297, C4519, C4527	CKSSYB102K50
	C1017, C1021, C1034, C1035, C1052	CKSSYB103K16
	C1205, C1206, C1224, C1225, C1305	CKSSYB103K16
	C1308, C3003, C3311, C3315, C3317	CKSSYB103K16
	C4503, C4509	CKSSYB103K16

Mark No.	Description	Part No.
	C1513, C1514, C4243	CKSSYB104K10
	C5105	CKSSYB271K50
	C3204	CKSSYB331K50
	C1005, C1008-C1010, C1015, C1016	CKSSYF104Z16
	C1019, C1022, C1024, C1026	CKSSYF104Z16
	C1028-C1030, C1032, C1033, C1050	CKSSYF104Z16
	C1053, C1055-C1058, C1063, C1064	CKSSYF104Z16
	C1105, C1203, C1211-C1214, C1222	CKSSYF104Z16
	C1230, C1233, C1234, C1239-C1242	CKSSYF104Z16
	C1302, C1304, C1312, C1314	CKSSYF104Z16
	C1320, C1321, C1328-C1331	CKSSYF104Z16
	C2501-C2505, C3004-C3006, C3101	CKSSYF104Z16
	C3104-C3106, C3113, C3202, C3203	CKSSYF104Z16
	C3206, C3209, C3217, C3309, C3312	CKSSYF104Z16
	C3401, C4244, C4249, C4251-C4256	CKSSYF104Z16
	C4261-C4263, C4265, C4279, C4286	CKSSYF104Z16
	C4291, C4501, C4504-C4507	CKSSYF104Z16
	C4516, C4517, C4523, C4524	CKSSYF104Z16
	C4552-C4562, C5110-C5112, C5114	CKSSYF104Z16
	C5118, C5127	CKSSYF104Z16
	C1001, C1006, C1007, C1011, C1013	VCG1057
	C1018, C1027, C1031, C1113, C1115	VCG1057
	C1202, C1204, C1208, C1221, C1223	VCG1057
	C1227, C1303, C1306, C1309, C1902	VCG1057
	C3001, C3102, C3103, C3219	VCG1057
	C3305, C3306, C3316, C3737, C3738	VCG1057
	C3801, C3802, C4202-C4219 (1.0 YF)	VCG1057
	C4221-C4229, C4232, C4239, C4240	VCG1057
	C4248, C4250, C4257-C4260, C4264	VCG1057
	C4266, C4267, C4269-C4274	VCG1057
	C4283, C4284, C4518, C4520	VCG1057
	C4572-C4574, C5101, C5103, C5113	VCG1057
	C5119, C5120, C5123-C5126	VCG1057
	C3310, C4278, C4290, C4533 (1.0 YB)	VCG1058
	C4532 (22/6.3)	VCG1061
	C1215 (150/4)	VCH1246
	C4548, C4575, C4576 (47/4)	VCH1253

RESISTORS

	R5133, R5134	RAB4CQ0R0J
	R1042-R1047, R1051, R1054	RAB4CQ103J
	R4241, R4242	RAB4CQ103J
	R3853-R3857, R4252, R4253, R4352	RAB4CQ220J
	R4354, R4356, R4358, R4360	RAB4CQ220J
	R3801-R3806, R3828-R3833	RAB4CQ223J
	R1241-R1244, R1251-R1254	RAB4CQ330J
	R1325-R1328, R3810-R3813, R3824	RAB4CQ330J
	R3837-R3840, R3851	RAB4CQ330J
	R1401-R1411, R1451-R1454	RAB4CQ560J
	R1455-R1458	RAB4CQ820J
	R3208, R3223	RN1/16SC56R0D
	R3314, R3315, R4536, R4537	RN1/16SE1003D
	R3207, R3226	RN1/16SE1502D
	R5103	RN1/16SE5101D
	R3209, R3224	RN1/16SE8201D
	R5108	RN1/16SE9101D
	R3003, R3101, R3201, R3205, R3206	RS1/10S0R0J
	R3402, R4224, R4230, R4232	RS1/10S0R0J
	R4513, R4514, R4522	RS1/10S0R0J

Mark No.	Description	Part No.
	R3110, R4532	RS1/16S1001F
	R4202, R4206, R4531	RS1/16S1101F
	R2502, R2505, R2508, R2511, R2514	RS1/16S1800F
	R4201, R4204	RS1/16S2201F
	R4203, R4210	RS1/16S2701F
	R1501, R1503	RS1/16S3901F
	R4534	RS1/16S5600F
	R5104-R5107	RS1/16S56R0D
	Other Resistors	RS1/16S###J

OTHERS

	X3401 CERAMIC (16MHz)	CSS1616
	X3301 CRYSTAL (27.000MHz)	VSS1204
	X4281 CRYSTAL (27.000MHz)	VSS1205
	X5101 CRYSTAL (24.576MHz)	VSS1206
	CN4502 CONNECTOR	AKM1290
	CN1901 7P CONNECTOR	VKN1411
	CN3801, CN3802 FFC CONNECT0R	VKN1794
	CN3808 30P CONNECTOR	VKN1892
	CN5601 CONNECTOR	VKN2010
	CN2201, CN3001 CONNECTOR	VKN2011
	CN4501 CONNECTOR	VKN2012

H MAIN ASSY (531H_Non DV Model)

SEMICONDUCTORS

⚠	IC4571	BA25F18WHFP
	IC3203	BD4850G
	IC3707	BU4809F
	IC3706	BU4828F
	IC4201	CM0041BF
	IC3301	CY244ZXC-04D
	IC1201, IC1221	EDD1216AATA-6B-E
	IC1301	K4H511638B-UCB3
⚠	IC4512	NJM2861F33
⚠	IC4503, IC4504	NJM2872F05
	IC3303, IC4511	NJU7013F
	IC3201	PCM1742KE
	IC3101	PCM1802DB1
	IC3401	PDF014A
⚠	IC4509	PQ035ZN01ZPH
⚠	IC4506	R1170S331B
	IC1001	R8A34011BG
	IC3001	TC74LCX541FTS1
	IC3304	TC7SAU04FU
	IC1011, IC3002	TC7SH08FUS1
	IC4281, IC4282	TC7SHU04FUS1
	IC3202	UPC4570G2-A
	IC1102	VYW2309
	Q2501-Q2505, Q4202, Q4203	2SA1576A
	Q4501	2SC2411K
	Q3001	HN1C01FU
	Q3201	RN1903
	D3101-D3104	1SS355
	D4505, D4506	RB160M-40

COILS AND FILTERS

	F3101, F3303-F3305, F4231	DTF1069
	F4281, F4282	DTF1069
	L1004-L1008, L1102	DTL1106
	L4203	LCYA6R8J2520

Mark No.	Description	Part No.
L2101		VTL1067

CAPACITORS

C3207, C3211		CCSRCH121J50
C3208, C3210		CCSRCH681J50
C4281, C4282		CCSSCH120J50
C4245, C4275		CCSSCH330J50
C4246		CCSSCH680J50
C3303, C3304		CCSSCJ3R0C50
C3215, C3216, C4534, C4536, C4537		CEVW101M16
C2101, C3212, C3218		CEVW101M6R3
C1002, C1062, C1231, C1315, C3314		CEVW221M4
C4201, C4220, C4268, C4276, C4571		CEVW221M4
C3318		CEVWNP470M10
C1004, C1036, C1059, C1104, C1201		CKSQYB106K6R3
C1220, C1301, C3008, C3214		CKSQYB106K6R3
C3301, C3302, C3404, C4514, C4515		CKSQYB106K6R3
C4545		CKSQYB106K6R3
C1901, C4502, C4508		CKSQYB225K10
C4525, C4526, C4546		CKSQYB475K6R3
C3007, C4551		CKSRYF104Z50
C1003, C1012, C1020, C1023, C1025		CKSSYB102K50
C1040, C1051, C1207, C1209, C1210		CKSSYB102K50
C1226, C1228, C1229, C1307, C1311		CKSSYB102K50
C1313, C4296, C4297, C4519, C4527		CKSSYB102K50
C1017, C1021, C1034, C1035, C1052		CKSSYB103K16
C1205, C1206, C1224, C1225, C1305		CKSSYB103K16
C1308, C3003, C3311, C3315, C3317		CKSSYB103K16
C4503, C4509		CKSSYB103K16
C1513, C1514, C4243		CKSSYB104K10
C3204		CKSSYB331K50
C1005, C1008-C1010, C1015, C1016		CKSSYF104Z16
C1019, C1022, C1024, C1026		CKSSYF104Z16
C1028-C1030, C1032, C1033, C1050		CKSSYF104Z16
C1053, C1055-C1058, C1063, C1064		CKSSYF104Z16
C1105, C1203, C1211-C1214, C1222		CKSSYF104Z16
C1230, C1233, C1234, C1239-C1242		CKSSYF104Z16
C1302, C1304, C1312, C1314		CKSSYF104Z16
C1320, C1321, C1328-C1331		CKSSYF104Z16
C2501-C2505, C3004-C3006, C3101		CKSSYF104Z16
C3104-C3106, C3113, C3202, C3203		CKSSYF104Z16
C3206, C3209, C3217, C3309, C3312		CKSSYF104Z16
C3401, C4244, C4249, C4251-C4256		CKSSYF104Z16
C4261-C4263, C4265, C4279, C4286		CKSSYF104Z16
C4291, C4501, C4504-C4507		CKSSYF104Z16
C4516, C4517, C4523, C4524		CKSSYF104Z16
C4552-C4562		CKSSYF104Z16
C1001, C1006, C1007, C1011, C1013		VCG1057
C1018, C1027, C1031, C1113, C1115		VCG1057
C1202, C1204, C1208, C1221, C1223		VCG1057
C1227, C1303, C1306, C1309, C1902		VCG1057
C3001, C3102, C3103, C3219		VCG1057
C3305, C3306, C3316, C3737, C3738		VCG1057
C3801, C3802, C4202-C4219 (1.0 YF)		VCG1057
C4221-C4229, C4232, C4239, C4240		VCG1057
C4248, C4250, C4257-C4260, C4264		VCG1057
C4266, C4267, C4269-C4274		VCG1057
C4283, C4284, C4518, C4520		VCG1057
C4572-C4574		VCG1057
C3310, C4278, C4290, C4533 (1.0 YB)		VCG1058
C4532 (22/6.3)		VCG1061
C1215 (150/4)		VCH1246
C4548, C4575, C4576 (47/4)		VCH1253

RESISTORS

R1042-R1047, R1051, R1054		RAB4CQ103J
R4241, R4242, R5733, R5734		RAB4CQ103J
R3853-R3857, R4252, R4253, R4352		RAB4CQ220J
R4354, R4356, R4358, R4360		RAB4CQ220J
R3801-R3806, R3828-R3833		RAB4CQ223J
R1241-R1244, R1251-R1254		RAB4CQ330J
R1325-R1328, R3810-R3813, R3824		RAB4CQ330J
R3837-R3840, R3851		RAB4CQ330J
R1401-R1411, R1451-R1454		RAB4CQ560J
R1455-R1458		RAB4CQ820J
R3208, R3223		RN1/16SC56R0D
R3314, R3315, R4536, R4537		RN1/16SE1003D
R3207, R3226		RN1/16SE1502D
R3209, R3224		RN1/16SE8201D
R3003, R3101, R3201, R3205, R3206		RS1/10S0R0J
R3402, R4224, R4230, R4232		RS1/10S0R0J
R4513, R4514, R4522		RS1/10S0R0J
R3110, R4532		RS1/16S1001F
R4202, R4206, R4531		RS1/16S1101F
R2502, R2505, R2508, R2511, R2514		RS1/16S1800F
R4201, R4204		RS1/16S2201F
R4203, R4210		RS1/16S2701F
R1501, R1503		RS1/16S3901F
R4534		RS1/16S5600F
Other Resistors		RS1/16S###J

OTHERS

X3401	CERAMIC (16MHz)	CSS1616
X3301	CRYSTAL (27.000MHz)	VSS1204
X4281	CRYSTAL (27.000MHz)	VSS1205
CN4502	CONNECTOR	AKM1290
CN1901	7P CONNECTOR	VKN1411
CN3801, CN3802	FFC CONNECT0R	VKN1794
CN3808	30P CONNECTOR	VKN1892
CN2201, CN3001	CONNECTOR	VKN2011
CN4501	CONNECTOR	VKN2012

I POWER SUPPLY UNIT

OTHERS

⚠IC202	PROTECTOR (400mA)	AEK7054
⚠IC301	PROTECTOR (630mA)	AEK7061
⚠IC401, IC402	PROTECTOR (1.6A)	AEK7066

6. ADJUSTMENT

There is no information to be shown in this chapter.

7. GENERAL INFORMATION
7.1 DIAGNOSIS

◆ Jigs and Tools to be used

Remote control unit for serving (GGF1381)
DVD Recorder Data Disc (GGV1239) (When repairing until June 2005, use the Disc GGV1179.).
Download disc
Test disc (GGV1025)
DVD-RW (Commercial goods)

◆ Service Mode List

1. Setting type

Item	When to perform
7.1.1 Model setting	• When rplacing MAIN ASSY or JACB ASSY.
7.1.2 CPRM ID number and data	• When "CPRM ERROR" is displayed on the display screen. • After the MAIN ASSY, DRIVE ASSY or HDD replaced.
7.1.3 Firmware downloading method	• After model setting (After replacing MAIN ASSY, DRIVE ASSY, JACB ASSY). • After the HDD is replaced. • When NG is displayed for the version infomation in Service mode.
7.1.4 Video Adjustment for Specific Area	• When a flicker appears on the tuner display like a horizontal or vertial out-of-sync symptom
7.1.5 (4) OSD Filter Setting	• When a character flicker appears on the OSD depending on the monitor.

2. Diagnosis type

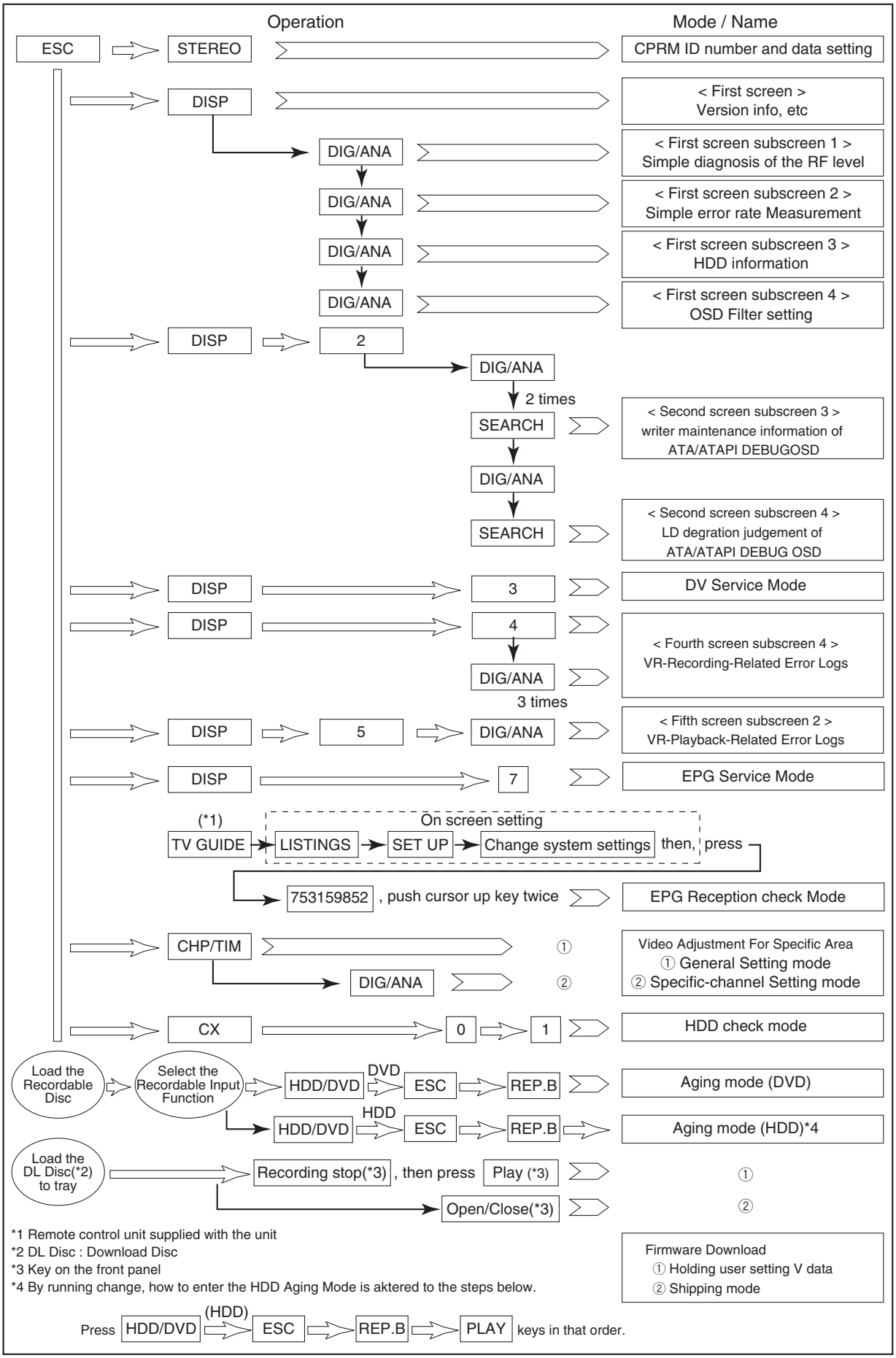
7.1.5 Service Mode First screen : Version, Simple diagnosis of the RF level, Simple error rate measurement, HDD information. Second screen : ATA/ATAPI debug screen, LD degration judgement Fourth screen : VR-recording-related error loss Fifth screen : VR-playback-related error loss	• When confirming version infomation • When confirming the state of DRIVE Assy.
7.1.6 DV Service Mode	When any failures occurs while a DV device connected
7.1.7 EPG Service Mode	When EPG data cannnot be or can be only partially obtained.
7.1.8 Aging Mode	When a claimed sympton is difficult to reproduce.
7.1.9 HDD Check Mode	When checking the quality of HDD.

◆ Necessary procedure List when replacing Assys

Following is the surely necessary procedures and the produet state after changing when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY JACB ASSY	1. Model setting 2. CPRM setting 3. Firmwave download	×	○
DRIVE ASSY	1. CPRM setting 2. Firmwave download	○	○
HDD	1. CPRM setting 2. Firmwave download	○	×

◆SERVICE MODE MAP



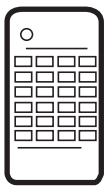
7.1.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]



Remote control unit for servicing (GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

① After power on, the following screen is displayed on TV monitor. Press four digits properly (for example " 8201 ") by using the remote control unit for service, according to the screen information.

```
[Recorder's Model Setting]
 Input the number using the remote for Service.

>- - -

  Input No.     Model
  [ 8201  :  DVR-533H/KU/CA    ]
  [ 8301  :  DVR-633H /KU/CA   ]
  [ 9201  :  DVR-531H /KU/CA   ]
```

②Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

③ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

④ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example " DVR-533H/KU/CA ").

```
DVR-533H/KU/CA        VERSION: 1.**
  SYSCON   : RELEASE_166
             Rev     :1.10357.2.43
TUNERCON   : 835.000                  OK
    DRIVE  : DVD-RW DVR-R09R          OK
             1.52                     OK
             DKT0000233JP             OK

      HDD  : WDC WD800BB-xxJKCx       80
   DEVICE  : PRISM2-ES2
   REGION  : 1
        C  : *********
   FLASH   : 64M
   IRCON   : 1.01                     OK
   TFD     : EPG US LIB               OK
```

⑤ End

7.1.2 CPRM ID NUMBER AND DATA SETTING

[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD–RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY , DRIVE ASSY or the HDD is exchanged.

[Tools to be used]

Remote control unit supplied with the unit (VXX2967)

Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (GGV1239)(*1)

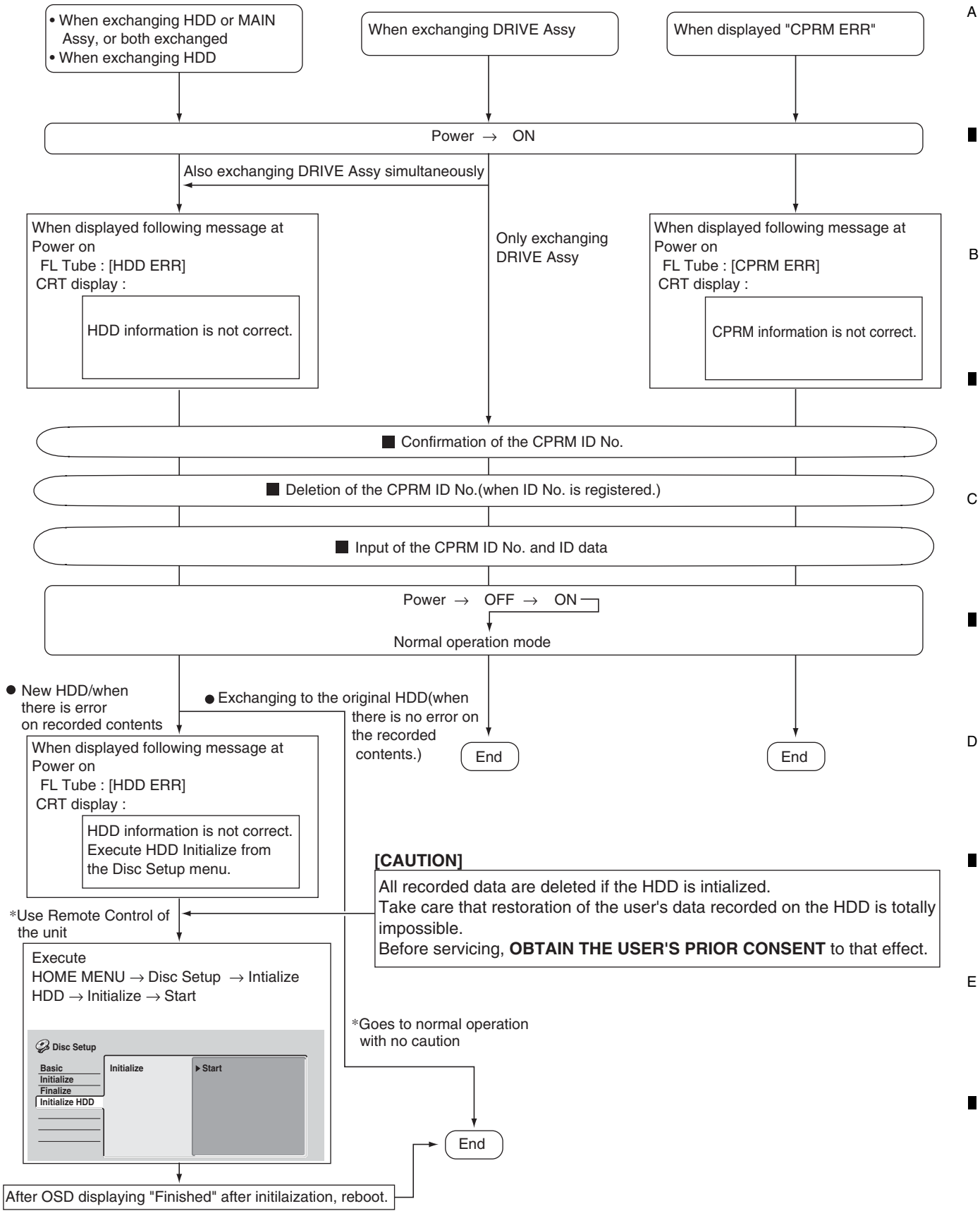
[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the ID data disc (GGV1239), the disc will automatically be unloaded.

(*1) DDV1239 will be released on July 2005.
Until new disk(GGV1239) will be released, use GGV1179.

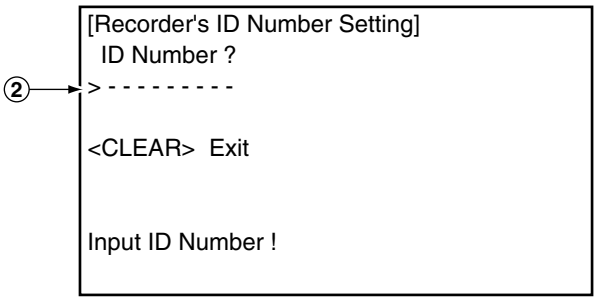
■ Input Flow of the ID No. and ID data when exchanging HDD, MAIN Assy or Drive Assy



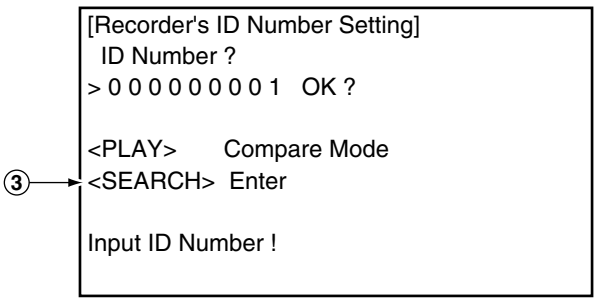
How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

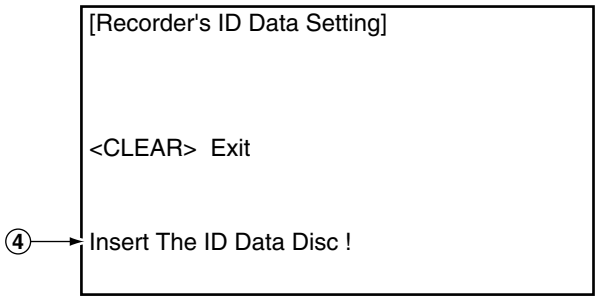
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



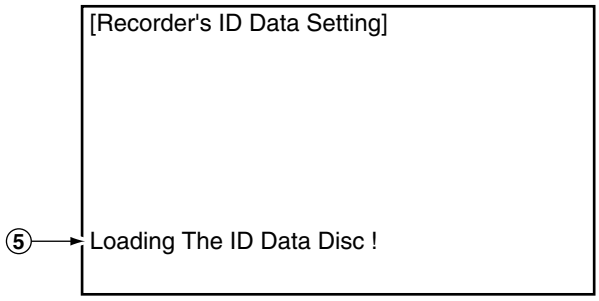
③ After inputting the number, press SEARCH keys to register the ID number.



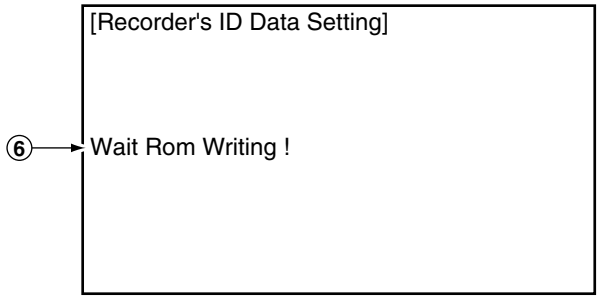
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

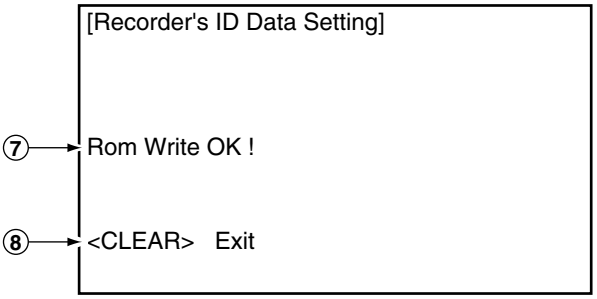


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

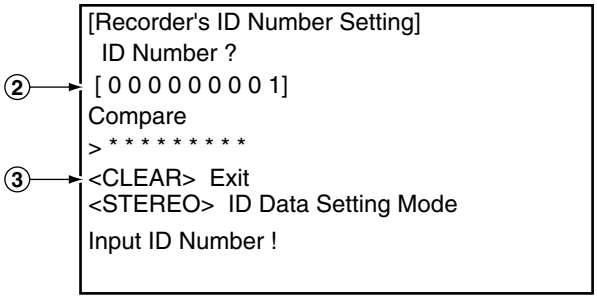


[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

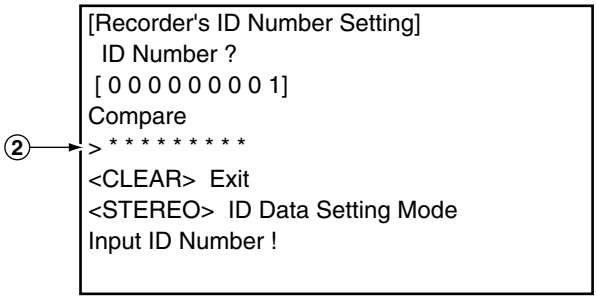
③ To exit this mode, press CLEAR key.



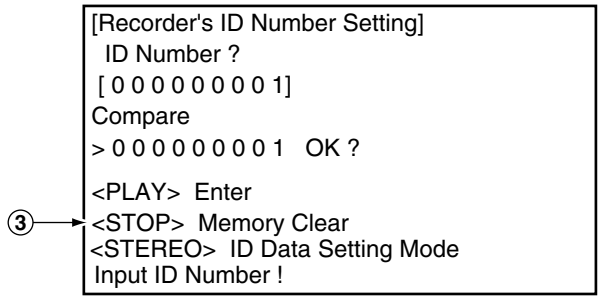
[How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



7.1.3 FIRMWARE DOWNLOADING METHOD

[Purposes]

1. When the main board is replaced, the firmware versions for the system control computer, drive, IR microcomputer and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above four, firmware downloading is necessary in the following two cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy, JACB Assy or Drive Assy
   ④ After changing HDD (downloading the EPG Library (program code) to HDD)

[Notes]
When downloading is disabled, at ON time, usually "HDD data is not correct" is displayed on screen and "HDD ERR" on the FL . The EPG program is not booted up.

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for downloading: disc download and serial download

1. DISC DOWNLOAD

[Tools to be used]

Remote control unit for servicing (GGF1381)

Download DISC

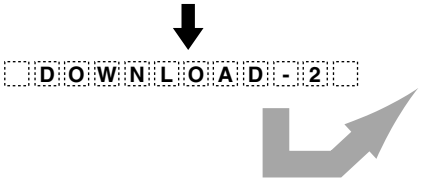
[Notes]

Be sure NOT to turn off the unit during downloading.
If the unit is turned off during downloading, the SYSCON, TUNERCON and DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the download disc on the tray. Press a " Record Stop " button while pressing a "PLAY" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display

③ Take out the Download Disc.



* After download is completed, the power turns off, and turns on and a disc tray closes automatically.
* It takes for about 7-8 minutes until download is completed.

④ Press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during downloading, proceed as follows before performing download again:

- In a case where downloading was incorrectly terminated while "DOWNLOAD-1" was displayed on the FL display:
  The EPG Library (program code) will not be downloaded to HDD correctly.
  Download from the disc again.
  When it is unable to download, or not operating correctly, replace the HDD.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the FLASH ROM (IC1102 : MAIN ASSY).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the DRIVE Assy.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-5" was displayed on the FL display
  The program for the IR microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the IRCON microcomputer (IC3401 : MAIN ASSY).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the TUNERCON microcomputer (IC101 : JACB ASSY).

(2) The setting way to shipping mode (Reference)
At ② lines of the [Procedures], press "OPEN/CLOSE" button while pressing REC STOP button.

2. SERIAL DOWNLOAD

[Purposes]

1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized. In such a case, the versions for the above three must be matched.
2. This method is used when disc downloading fails.

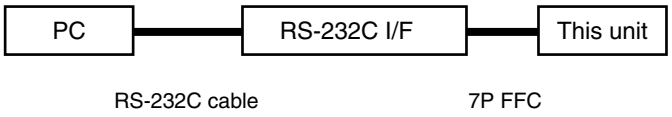
• In the serial download, the stored code are not downloaded to HDD. After serial downloading, be sure to do disc download.

[Tools to be used]

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Download program (UFU.exe)
* Firmware

[Connection]

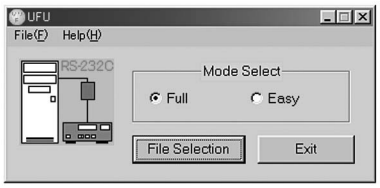
Connect as follows:



[Procedures]

① Connect the 232C I/F jigs above way.

② Turn on the PC and start the " UFU.exe ".

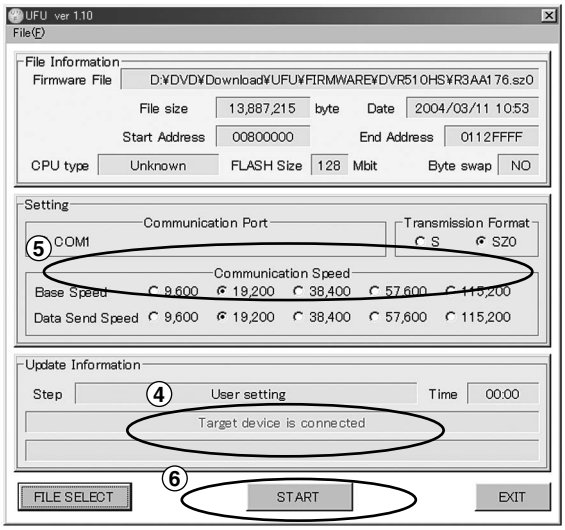


③ Select the Firmware file. ("sz0" file)

④ Turn the DVD recorder on and start the download program.
" Target Device is connected " is appeared on the screen.

⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 38,400
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and download may fail.
  In this case, please click "START" again.
- Other factors can be considerd if download fails 3 times or more.
- And it takes about an hour for updating the firmware.



7.1.4 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]

Remote control unit supplied with the unit (VXX2967)

Remote control unit for servicing (GGF1381)

1. Specific-Channel Setting mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

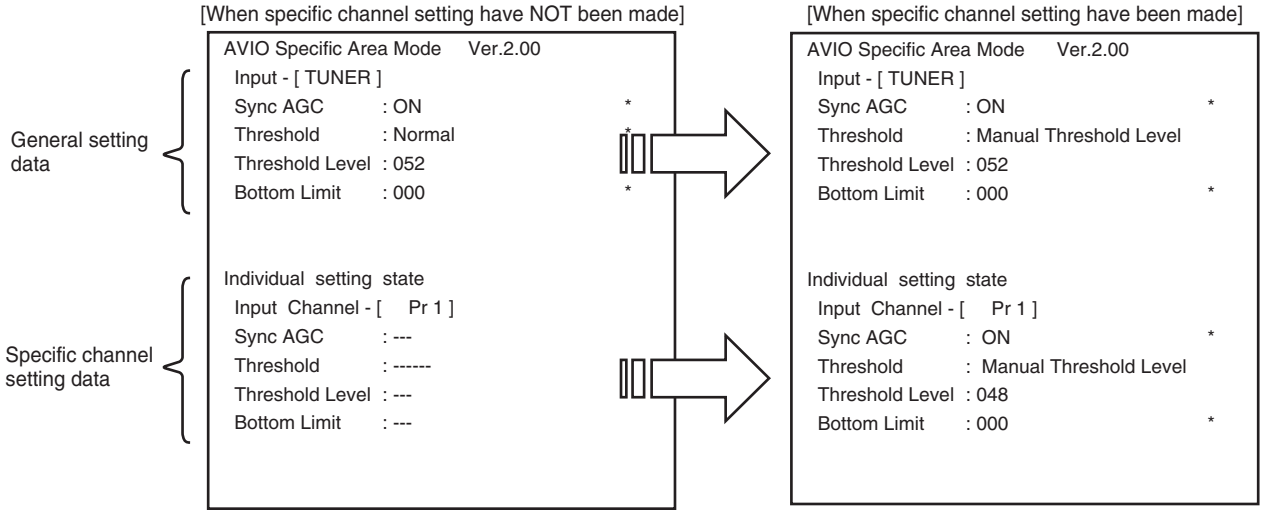
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."



[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
AVIO Specific Area Mode     Ver.200
 Input - [ TUNER ]
 Sync AGC         : ON                    *
 Threshold        : Manual Threshold Level
 Threshold Level  : 052
 Bottom Limit     : 000                   *


Individual  setting  state

 Sorry !
 You can store only 12 channels
 for Specific Area mode.
```

2. General Setting mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
AVIO Specific Area Mode   Ver 2.00
 Input - [ TUNER ]
 Sync AGC         : ON                    *
 Threshold        : Normal                *
 Threshold Level  :
 Bottom Limit     : 000                   *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
AVIO Specific Area Mode   Ver 2.00
 Input - [ TUNER ]
 Sync AGC         : ON                    *
 Threshold        : Normal                *
 Threshold Level  :
 Bottom Limit     : 000                   *

 This channel is set up
  individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)
Key operations in Specific Area Setting mode of the remote control units are shown in the table below (the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A], [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets Threshold.	(*)Normal Bottom + Alfa Manual Threshold Level V Manual Threshold Level		○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets Threshold Level.	According to the selected Threshold type, the value can be changed in the range shown below:	–	○	○
		• Bottom + Alfa 0 - 255 (Default : 87)		○	○
		• Manual Threshold Level 0 - 255 (Default : 173)		○	○
		• V Manual Threshold Level 0 - 255 (Default : 173)		○	○

Table 1: key operations in specific-Area setting mode (2/2)

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[<<|| STILL STEP], [STILL STEP ||>>]	Sets Bottom Limit.	0 - 255 (Default: 0)	–	○	○
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit VDEC Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

7.1.5 SERVICE MODE

Overview and purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs
[5] Fifth screen : VR-playback-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

1. Version information, etc. (First screen)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measuremen, HDD information, and OSD Filter setting

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

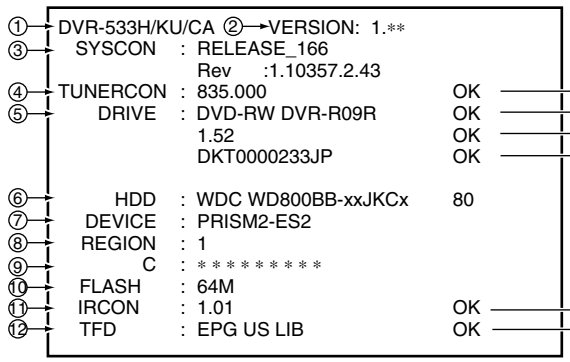
[How to enter] While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change

[How to quit] Press the ESC key.

[Description]

(1) First screen



① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type, serial No.)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ Version No. of PRISM
⑧ Region No.
⑨ CPRM information (CPRM key No.)
⑩ FLASH ROM information
⑪ EPG dictionary information, Version
⑫ HDD stored code information
HDD stored data (EPG Library)
Category of stored data
US EPG model : EPG US LIB

OK : Appropriate version compared with that of the firmware of the system control computer
OK+ : The version of the TUNER microcomputer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.

OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Replace with an appropriate DRIVE Assy.

OK : Appropriate version compared with that of the firmware of the system control computer
OK+ : The version of the drive microcomputer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.

OK : The serial No. for the drive has been registered.
NG : The serial No. for the drive has not been registered.
Measures to be taken: Replace with an appropriate DRIVE Assy.

OK : Appropriate version of theIRCON
NG+ : The version of the drive IR blaster computer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the IR blaster microcomputer is older.
Measures to be taken: Download the firmware.

OK : Normal readout is finished.
NG : ****** : Disable to read, Display in hexadecimal of revison of HDD stored code
When "---------" is displayed, data are not downloaded.
Measures to be taken: ① CPRM Input
② Download the firmware.

• Details on HDD data are described below:

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the ATA connector. • Replace the ATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the ATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD (see page 82), or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

(2) Simple diagnosis of the RF level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

[How to quit] Press the ESC key.

[Description]

```
DVR-533H/KU/CA      VERSION          : 1.**
  SYSCON   : RELEASE_***
             Rev     :1.******
TUNERCON   : 835.000                  OK
    DRIVE  : DVD-RW DVR-R09R          OK
             1.**                     OK
             DKT0000233JP             OK

       HDD : WDC WD800BB-xxJKCx       80
    DEVICE : PRISM2-ES2
    REGION : 1
         C : * * * * * * * * *

  Input CH : ** ch
  Freq Diff: Low 1
  AGC Volt : **** mV
```

- Input channel
- Input frequency difference
- AGC voltage

Subscreen 1

1) Frequency Difference (Freg Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
High	High
	Center
Just Tune	Low 1
Low	Low 2

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC Volt
Intense field area (Clear image)	70 dBµ or more	3300 mV or more
Less intense field area (Noise may be generated.)	50 dBµ or more 70 dBµ or less	3100 - 3300mV
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBµ or more 50 dBµ or less	2600 - 3100mV
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBµ or less	2600 mV or less

Tips:

For good reception, the field intensity must be 50 dBµ or more (AGC Volt 3100 mV or more).
For accurate measurement, use a field intensity meter.

(3) Simple Error Rate Measurement (Subscreen 2)

[How to enter]
- While the User Operation screen is displayed, press the [ESC] then [DISP] keys, then the [DIG/ANA] key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the [DIG/ANA] key.

[How to quit] Press the [ESC] key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1 on next page.

ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

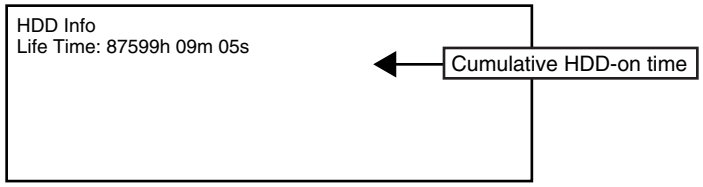
Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	–	–	8.0×10^{-4}
DVD-R	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}
DVD-RW	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}

(4) HDD information (Subscreen 3)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

(5) OSD FILTER SETTING (SUB screen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as charavter flicker, appears on the monitor, select the filter response.

[Tools to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.

OSD Filter Setting

OSD FILTER : ON

Subscreen 4

[Tips]

* If a setting data is changed, that is immediately reflected, and the data are written to nonvolatile memory (IC1102 : FLASH).
* The download for shipping mode see the data to default (ON).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting data (* : default)	Remarks
[Rev x 3] [x 3 Fwd]	Select ON / OFF setting of OSD Filter	ON(*) / OFF	[Rev x3] : Set the OSD Blightness Filter OFF [x3 Fwd] : Set the OSD Blightness Filter ON
[ESC]	Turn off the OSD and quit from the function. (Appears the tuner screen.)	–	–

2. ATA/ATAPI Debug Screen (Second screen)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

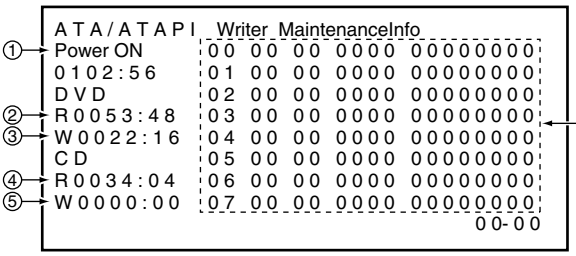
(1) Writer maintenance information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD (R9R Drive Assy [total hours of reading and writing])
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.

(2) LD degration judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter]
- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25°C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
  As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

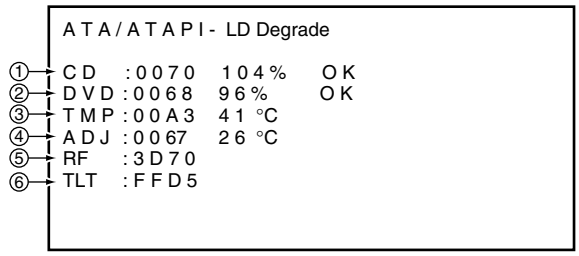


Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs and DVDs are both NG, replace the drive.

3. VR-Recording-Related Error Logs (Fourth screen)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

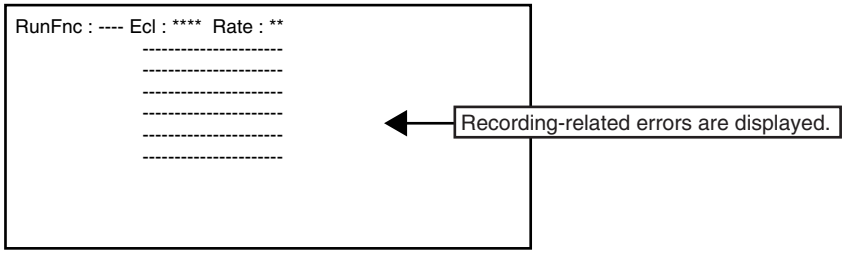
- While the User Operation display is displayed, press the [ESC], [DISP], then [4] keys, in that order.
- While any subscreen of the fourth screen is displayed, press the [DIG/ANA] key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the [ESC] key.

[Description of each subscreen]

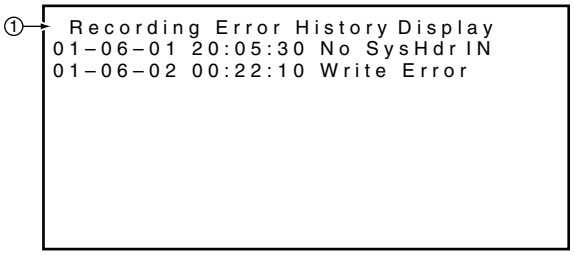
(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."



(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the [SPEED+] or [SPEED-] key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

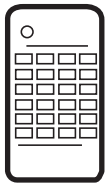
(4) Subscreen 5 to 11 (These subscreens are not for service use.)

4. VR-Playback-Related Error Logs (Fifth screen)

[Purposes]

It can be inferred that an operation that caused an error in the drive was performed or that a failure occurred in the drive if any of the error logs shown in "Table 2: Description of VR-playback-related errors" is recorded on this screen.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 5 keys, in that order.
- While any subscreen of the fifth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

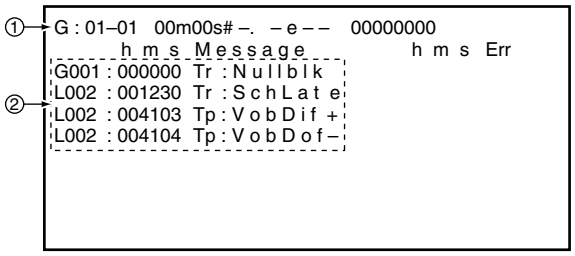
[How to quit] Press the ESC key.

[Description of each subscreen]

(1) Subscreen 1 (This subscreen is not for service use.)

(2) VR-Playback Error Logs (Subscreen 2)

- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected.
  (The possibility of a problem on the drive side is high.)



① Data on location of the display (Display only in disc playback with the VR mode)
Original(G)/play list (L), title No., chapter No. [X:XX-XX],
time of the display (min, sec, frame) [XXmXXsXX],
busy mark of the virtual mechanical-control computer [#],
error rate of the transfer data [X.XeXX],
playback logical address (ID) [XXXXXXXX]

② Error message log
Original(G)/play list (L), title No., time of generation (min, sec) [XXX:XXXX],
playback-related error log for the last 13 errors [XX:XXXXXXX]

Table 1: Description of VR-recording-related errors

Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error related to MPEG Encoder

Error Message	Description
AVEnc Hang	AVEncoder failed
IN Encode *	Changes cannot be made in the process of encoding
No SysHdr IN	System packet is not input periodically
Stm Start NG	Failure to start encoding (reasons not clear)
Stream NG	Inappropriate input stream data
Strm Start NG	Timeout waiting for system packet input at the beginning

● Error related to Drive system

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description
Bdr Cls NG	Close Border failed
Bdr Opn NG	Open Border failed
BUF Overflow	Overflow of the Stream Buffer
CLS Rzon Fail	Video Mode Close Rzone failure
Drive Hang	The Drive is hung up.
Drv Err	General error of the drive
Drv Hard Err	Abnormality in the drive hardware or firmware
Drv TimeOut	Timeout waiting for drive operation
Fail Repair	Repair failed
Format NG	Format failed
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.
Mech No Res	No response from the mechanical-control computer
MKB Invalid	MKB reading error
NWA Exhaust	NWA surpassed and impossible to use
OPC NG	OPC failed
PCA Full	PCA has been used up.
Read Err	Reading failed, ECC failed, etc.
ReadOnly DISC *	Because some data are invalid, data cannot be written
RMA Full	RMA has been used up.
Rzn Cls NG	Close RZone failed
Rzn Rpr NG	Repair RZone failed
Rzn Rsv NG	Reserve RZone failed
TMP-VMG WrErr	Video Mode TMP VMGI Write Error
VTSI_B Wr Err	Video Mode VTSI BUP Write Error
VTSIB2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)
VTSI Wr Err	Video Mode VTSI Write Error
VTSI_2 Wr Err	Video Mode VTSI Write Error (After Layer Change)
Write Err	The Drive failed to write and could not be recovered.

● Error related to Dubbing

Error Message	Description
H2D CP SomeNG	Other NG HDD →DVD copy
Mem get NG	Video Mode Copy Memory has not ensured.
Strm TransfNG	Video Mode Copy Stream Transfer NG
Tracon Trn NG	Video Mode Copy Tracon tranfer has not been completed.
VC Cell Max	Maximum number for Video Mode copy Cells exceeded
VC CopyCancel	Video Mode Copy Copy Cancel

● **Error related to Dubbing (continued)**

Error Message	Description
VC FlushC NG	Video Mode Copy Flush Cache NG
VC HDD C Err	Inappropriate Video Mode Copy HDD content
VC HDD Inf NG	No information on Video Mode Copy HDD
VCHDD Info NG	Obtaining Video Mode Copy HDD Cell information failed
VC Idling NG	Video Mode Copy idling NG
VC Pck Anl NG	Analizing Video Mode Copy Pack failed
VC Transf Stp	Video Mode Copy Transfer Stop
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.
VC VOBU SizeE	Video Mode Copy VOBU Size NG
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed
V2H APP FL NG	VR → HDD APP FLG is OFF
V2H Aud Ch NG	VR →HDD Audio Channel NG
V2H Aud Md NG	VR →HDD Audio Mode NG
V2H Aud Stm N	VR →HDD Audio Stream number NG
V2H SRC Prot	VR →HDD copy prohibitted material
V2H Unknown	VR →HDD other NG
V2H VOBU TMNG	VR →HDD Play back time of each VOBU is different
V2H V Reso NG	VR →HDD Video resolution NG

● **Other Errors**

Error Message	Description
Abort *	Cancellation
Already open	Extension file is already opened.
BK BATT Down	Backup RAM data has been erased.
BK FSYS Dirty	Backup RAM data has not been wrtten on the File Sys.
BUG	Some bugs
BusReset Done	Bus Reset has been excecuted.
Cell Close NG	Cell Close NG
CPRM IC NG	Inappropriate CPRM IC
Dir Depth Err	Tree of Directory is too deep.
Disc Full	No further data can be written because the disc is full.
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure
DRAM NG	Abnormality in access to the Work DRAM
Drive Destroy	The drive has crashed.
EncModul Hang	Encoder routine is hung up.
F Alrdy Exst	Extension file is already exist.
File cansel	Extension file is canseled.
FileNot Exist	Extension file is not exist.
Format Excec	Formatting has been executed.
Invalid Disc *	The disc cannot be recognized.
Invalid Param *	Invalid parameter
Invalid P VMG	Information of +VR is NG.
Invalid TMVMG	Invalid TMP_VMGI content
Invalid UDF *	Invalid UDF content
Invalid VMG *	Invalid VMG content
Invalid VTSI	VTSI information of +VR is unusual.
Irr Action *	Incorrect action
MKB REVOKED	Error in gaining data
Limit Over *	Standard maximum limit exceeded
No More Info *	No more space in the internal work-management area
No Permission *	No permission to write to the disc
No Video	No video input (not locked)
Now Busy *	In the process of the emergency processing
NV Pck DMA Er	Inappropriate NaviPack DMA
NV Pck MK Err	Error in creating NaviPack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input
Over Heat	Abnormal temperatute
PARAM NO ACCP	Recording parameter is not matched.

● **Other Errors (continued)**

Error Message	Description
Process Over	Process is overfull.
Protect Src *	Source to be recorded is copy-protected.
Rec Pause *	No operation permitted during recording pause
Relocation Do	VR-recording data was relocated
Repair Excec	Repairing has been executed.
Something *	Undetermined error
SRAM NG	Abnormality in access to the backup work SRAM
Status NG *	Abnormality in change of statuses
SW PVR	Switch to +VR playback process
SW Vpb mode *	Switching to video playback routine is required.
SW Vrec mode *	Switching to video recording routine is required.
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp
VBR-SRAM NG	Abnormality in VBR SRAM
V Categ ID NG	Inappropriate Category ID
V Cate Inf NG	Inappropriate Category information
V Ext MAX Ovr	Count Max exceeded
V ExtToo Big	The extension file is too large.
V Ext TY NG	Type NG
Virgin DISC	Virgin Disc
VOBU Info NG	Inappropriate VOBU information
WaterMark Det	Watermark detected
WM Cracked	WM Cracked

● **Error related to HDD**

Error Message	Description
Do nothing	Do nothing for demand.
ESFSYS CORUPT	easyfsys error
ESFSYS INIT	easyfsys initializing
HDD Buff High	High-level process executed for the HDD Buffer
HDD DEF DONE	HDD deflag finished
HDD DEF ERR	HDD deflag error
HDD Destroy	HDD is not recognized on the bus.
HDD INFO BAD	Incorrect HDD Management Data
HDD Initialize	HDD initialized
HDD IRRG POFF	Abnormal power off
HDD MBR NG	Inconsistent MBR data
HDDReset Done	HDD Reset executed
HDD ROMSUM NG	Rom-code check sum NG
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD SMART NG	Inappropriate HDD SMART
HDD Trans Err	DMA error in HDD copy transfer
HDD unauthor	Inconsistent HDD serial No.
HDD Zero WR	MBR was written
Task No Activ	Task has not been activated.
TT Rec Over	Title recording time full

● **No Error**

Error Message	Description
Non Err *	Normal

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

Table 2: Description of VR-playback-related errors

Error Message	Description
Av : B/CTOvr	AV1: Buffer-clear timeout
Av : SpmTOvr	AV1: Timeout for a step command
Av : StrmOvr	AV1: Timeout for waiting for stream ready
Av : TpmTOvr	AV1: Timeout for TP mode change
CC_OS_ERR	Closed caption task: OS error
ERR_RCV!	TPP task: Detects hang-up of AV decoder and starts recovery
Mn : Av1Hang	Main task: Detects hang-up of AV decoder and starts recovery
Rv : LnkFail	Reverse playback task: Starts compensation by detecting link failure
Rv : LnkTOvr	Reverse playback task: Timeout for waiting for link
Rv : OplTOvr	Reverse playback task: Timeout for waiting for I-picture of the open GOP immediately after starting decoding
Rv : OpnTOvr	Reverse playback task: Timeout for waiting for B-picture of the open GOP immediately after starting decoding
Tr : OrderEr	Transfer task: Inconsistent order
Rv : R2FTOvr	Reverse playback task: Starts retrial after detecting timeout from reverse pause to forward pause
Rv : TopVbEr	Reverse playback task: Forced termination because of a possible error of the top data during reverse normal playback
Rv : 1stTOvr	Reverse playback task: Timeout for waiting for interruption to the top VOBU immediately after starting decoding
Tp : midNULL	TPP task: The management information pointer designated was NULL.
Tp : RStepEr	TPP task: Although the reverse step had failed, the operation was forcibly terminated because the top cell was located.
Tp : ScanNg	TPP task: Failure to set the TPP memory when scanning was canceled.
Tp : tppErr	TPP task: Inconsistency occurred.
Tp : VobDif+	TPP task: The decoder STC advances by 1 VOBU hour.
Tp : VobDif-	TPP task: The STC of the management information advances
Tr : NaviErr	Transfer task: Inconsistency between NAVI (navigator) of management data and actual NAVI
Tr : NullBlk	Transfer task: NULL at the top block (Detecting NG stream made at the DVR-1000 series and starting protection process.)
Rv : OrderEr	Reverse playback task: Inconsistent order
Tr : ReadErr	Transfer task: ATA read error
Tr : SchLate	Transfer task: ATA search late
Tr : SemTOvr	Transfer task: Timeout for gaining semaphore (no synchronization with the display)

Abbreviations:

STC = System Time Clock
VOBU = Video Object Unit
GOP = Group Of Picture
B-picture = Bidirectionally predictive-picture
I-picture = Intra-picture
P-picture = Predictive-picture
TP mode change = AV1 term (Trick Play mode change)

7.1.6 DV SERVICE MODE

1. DV debug

[Purpose]

To check whether communication between a DV device and the unit is normal when a DV device is connected

[Tools to be used]

Remote control unit for servicing (GGF1381)

- DV device
- DV cable

[How to enter] Press the ESC , DISP then 3 keys, in that order.

[How to quit] Press the ESC key.

[Mode description]

① **(DV/1394) Init:**OK **AV:**02 **DV**:01

② [**Recorder**] **GUID:**00E0360004A00001

③ [**DV**] **GUID:**0080880303480E96
④ **VN:**VICTOR **MN:**GR-D50K
⑤ **TM:**C3 **TS:**75 **CT:**32 **WP:**01 **PS:**FF **OS**:00
⑥ **CA:**A000002020 **CV:**FF **MD:**VTR
⑦ [**DVdecode:**Yes] **LineSys:**525-60
⑧ **TC:**00h20m35s02f **RD:**02/02/05 **RT:**10h34m50s
⑨ **ASPECT:**4:3 **CGMS:**000000 **APSTB:**00 **DEC:**525-60
⑩ **SF:**32KHz **QU:**12bit **AMODE:**4) Stereo

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	Init	Whether the initialization of 1394 LINK and DV order inside PRISM2 has been completed (OK) or not (NG)	
	AV	Number of AV devices recognizing connection	Identification number of AV devices including D-VHS, etc other than DV devices.
	DV	Number of DV devices recognizing connection	If the number does not become 01 even if a DV device is connected, identification of that device fails.
②	GUID	GUID set in ConfigROM of the unit	GUID : Global Unique ID (Specific ID for DV devices)

No.	Item	Description	Remarks
③	GUID	GUID set in ConfigROM of the DV device connected	Data are displayed only if one DV device is identified.
④	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.)
⑤	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Write-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑥	CA	Connect AV data obtained from the DV device	Data are displayed only if one DV device is identified.
	CV	Camera/Vtr mode data obtained from the DV device	
	MD	DV device mode	Camera or VTR is displayed only if one DV device is identified.
⑦	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV.
	LineSys	Input Line System setting	
⑧	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when the DV signal is inputted. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑨	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video)	*CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated.
⑩	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	

2. Simple Diagnosis of DV

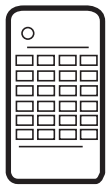
Symptoms		Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for DV input	1	DV ①	Check the init indication: OK: Initialization of 1394 LINK and DV decoder inside PRISM2 appropriately completed NG: Initialization of 1394 LINK and DV decoder inside PRISM2 has not been completed properly.	Defective IC1001(PRISM 2) / IC5101(1394PHY), improper connection between IC1001 / IC5101 defective soldering, etc.
	2	DV ①	Check the number of DV devices when one DV device is connected to the recorder: 01 : The connected DV device is correctly identified. Other than 01 : The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC5101(1394PHY), defective cables, an IEEE 1394 device other than the DV
No picture nor sound for DV input	1	DV ⑨	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC1001(PRISM2), defective soldering, defective power supply, etc.
	2	DV ⑪	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective IC, defective source device **Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	1	DV ⑪	Check CGMS:	Recording cannot be performed for a copy-protected source.
No sound for DV input	1	DV ⑫	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.

7.1.7 EPG SERVICE MODE

[Purposes]

Check the version of TV Guide library.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[How to enter] • Press the [ESC],[DISP], then [7] keys, in that order.

[How to quit] Press the [ESC] key.

[Description of the mode]

1. EPG SERVICE MODE

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456
00  (TVComm)-MAIN
01   VERSION       : 008.001.053
02   UPDATE        : 000.000.000
03
04
05
06
07  MODEL ID       : AF239CAD
08
09
10
11  NEXT WAKEUP    :          0000/17:49:00
12  GUIDE TIME     : 2003/10/10(FRI)17:49:02
13  HOST TIME      : 2003/10/10(FRI)17:49:02
14
```

Line	Display Item	Description
Line 01	VERSION	TV Guide library version number.
Line 02	UPDATE	TV Guide library update number.

2. EPG RECEPTION CHECK MODE

[Purposes]

Check the receotion of each packet for EPG.

[Tool to be used]

Remote control unit supplied with the unit (VXX2967)

[How to enter] Press the [TV GUIDE] , move cursor up and select "LISTINGS", move cursor right and select "SET UP". Move cursor down and select "Change system settings". Press "753159852". Debug screen will appear. Then push cursor up key twice. "Section Reception - Slicing" screen appears.

[How to quit] Press the [RETURN] / [TV GUIDE] / [HOME MENU] key.

[Description of the Detail mode]

EPG RECEPTION CHECK MODE
Page 1

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  10/10/2003 21:54 [2]       Section Reception - Slicing
01
02                      SinceCold      HostChan      CurrChan
03  Starts                   1630             0             0
04  Ends                     1566             0             0
05  Drops                       9             0             0
06  NoBufs                      0             0             0
07  AOver                       0             0             0
08  BadPMW                      0             0             0
09  BadBuf                      0             0             0
10  TypeA                       0             0             0
11  ACorr                       0             0             0
12  AErrs                       0             0             0
13  TypeB                       0             0             0
14  BCorr                       0             0             0
15  BErrs                       0             0             0
16  COver                       0             0             0
17  TypeC                    1550             0             0
18  CCor                        3             0             0
19  CErrs                      12             0             0
20  CBad                        0             0             0
```

Line	Display item	Description
Line 03	Starts	The number of received packet starts.
Line 04	Ends	The number of received packet ends. A completed packet has both a Start and an End.
Line 05	Drops	The number of dropped fields received between a packet Start and packet End.
Line 06-09	NoBufs AOver BadPMW BadBuf	For design use.
Line 10	TypeA	The number of TypeA packet that the unit received.
Line 11	ACorr	The number of TypeA packet that error is corrected.
Line 12	AErrs	The number of TypeA packet that error could not be corrected.
Line 13	TypeB	The number of TypeB packet that the unit received.
Line 14	BCorr	The number of TypeB packet that error is corrected.
Line 15	BErrs	The number of TypeB packet that error could not be corrected.
Line 16	COver	For design use.

Line	Display item	Description
Line 17	TypeC	The number of TypeC packet that the unit received.
Line 18	CCorr	The number of TypeC packet that error is corrected.
Line 19	CErrs	The number of TypeC packet that error is not corrected.
Line 20	CBad	For design use.

[Tips] If the reception is bad, Drop, *Corr, *Errs will be a large percentage of correctly received packets. The TV Guide data feed has built in redundance, small numbers of errors are expected. In this product, the CurrChan column will always be zero, there is no data collection while powered on. The HostChan column values represent all packets received from the TV Guide setup host. The Since Cold colmn represent all packets received from any host since the last System Reset.

7.1.8 AGING MODE

[Purposes]

If symptoms regarding recording/ playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

[Tools to be used]

Remote control unit for servicing (GGF1381)

Remote control unit supplied with the unit (VXX2963)

Commercially available, recordable DVD-R and DVD-RW discs

[Notes]

- When aging for the DVD-RW and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. (aging for RW only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed. (aging for RW only)

[Description of operation]

Aging for the DVD-RW/DVD-R

Aging for the DVD-RW	Aging for the DVD-R
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours.
③ Initialization is performed according to the setting specified in "DVD-RW automatic initialization" (accessed by selecting "Unit Setting" then "Option").	After ② the tray closes, disc detection is performed, and if 99 titles have already been registered, the unit stops there. The number of loops is retained and indicated on the FL display. An error indication is retained as an OSD.
During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001]	During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001]
If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B key on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

Note:

Indications on the FL display are retained, and this information is also retained as an OSD.

7.1.9 HDD CHECK MODE

How to diagnose failure of the hard disc drive (HDD)

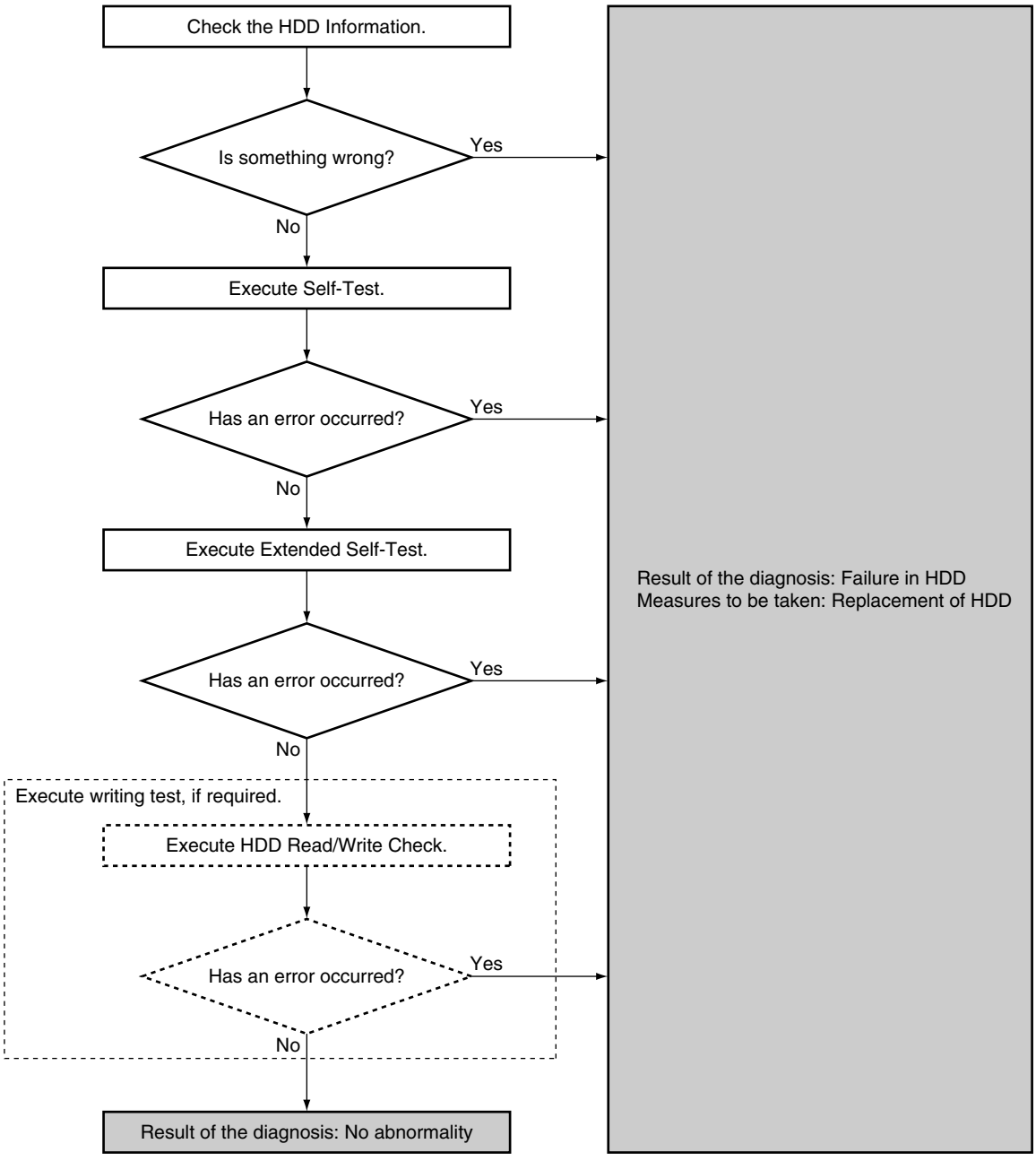
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

1. Flow of HDD diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 90 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 3 hours/160 GB
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 11 hours/160 GB

2. How to start or terminate the diagnostic program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

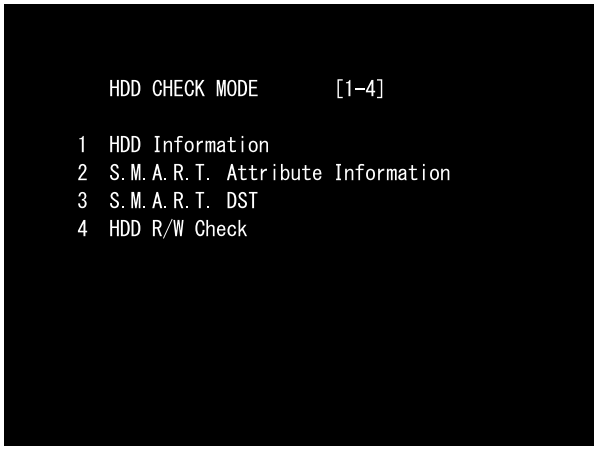
How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

3. Diagnosis procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



Tests to be executed
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

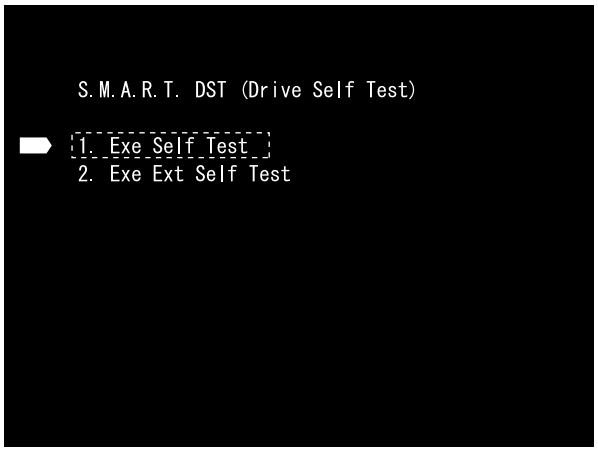
Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

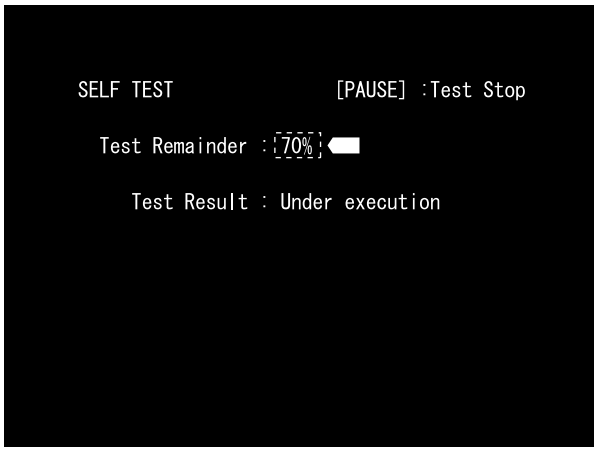
② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

Detailed description
① Model:
For the correct model name, refer to the display of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.
Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



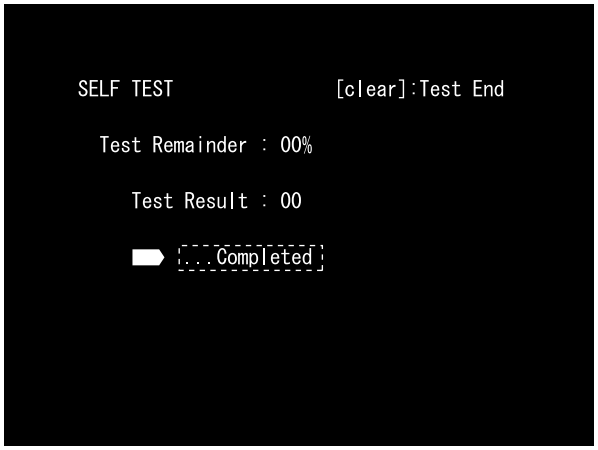


The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

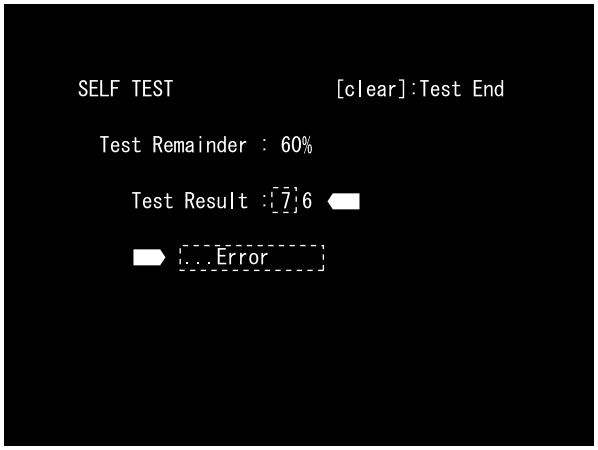
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

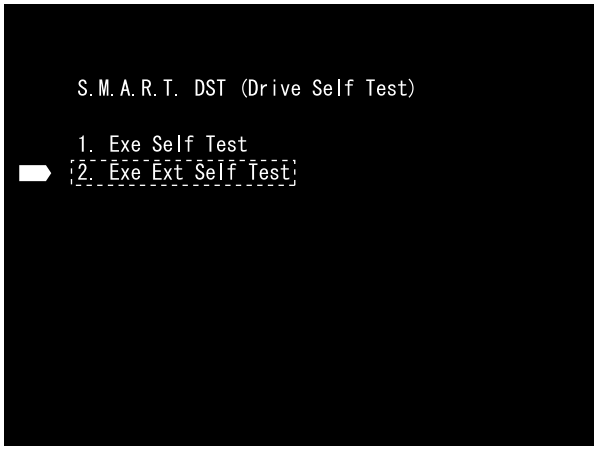


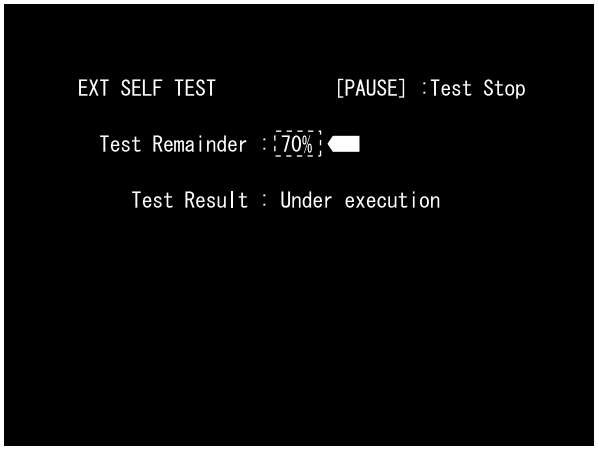
Example: With an error



To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



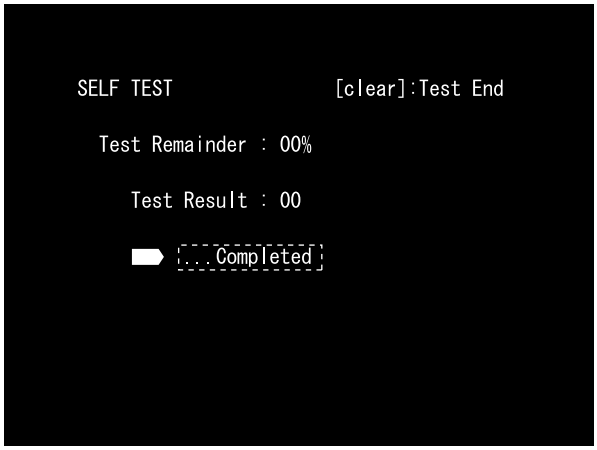


Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

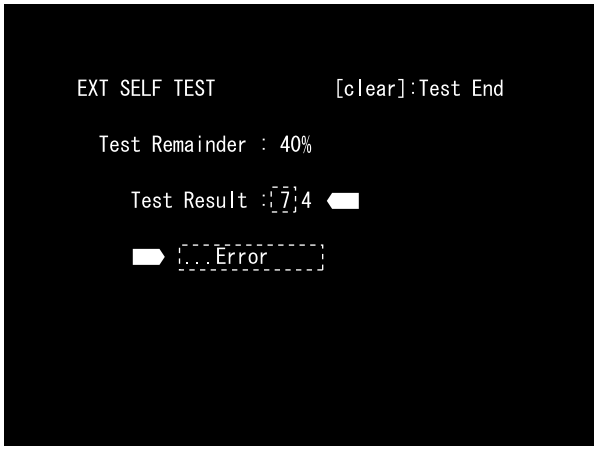
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

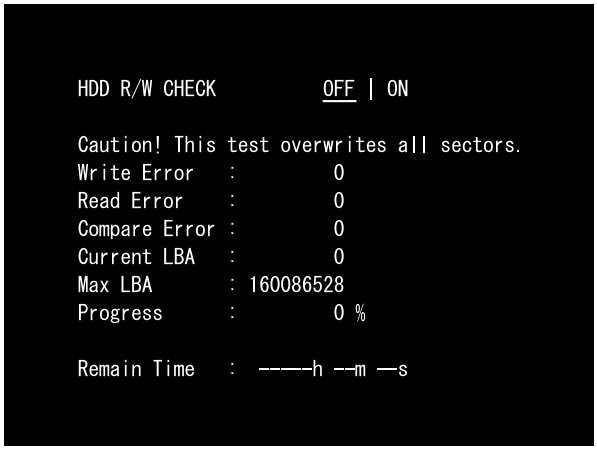


Example: With an error

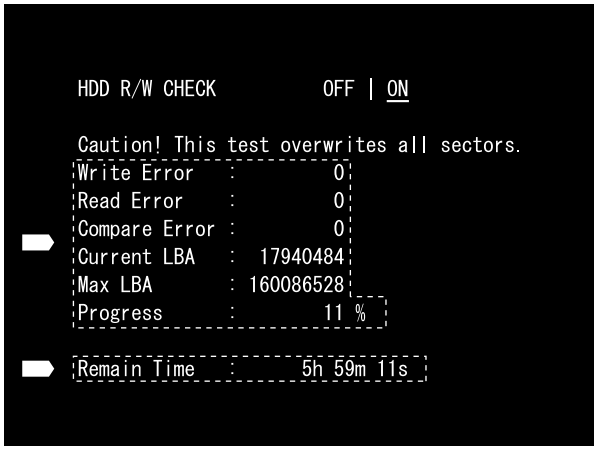


To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.
Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.
To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.



The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.

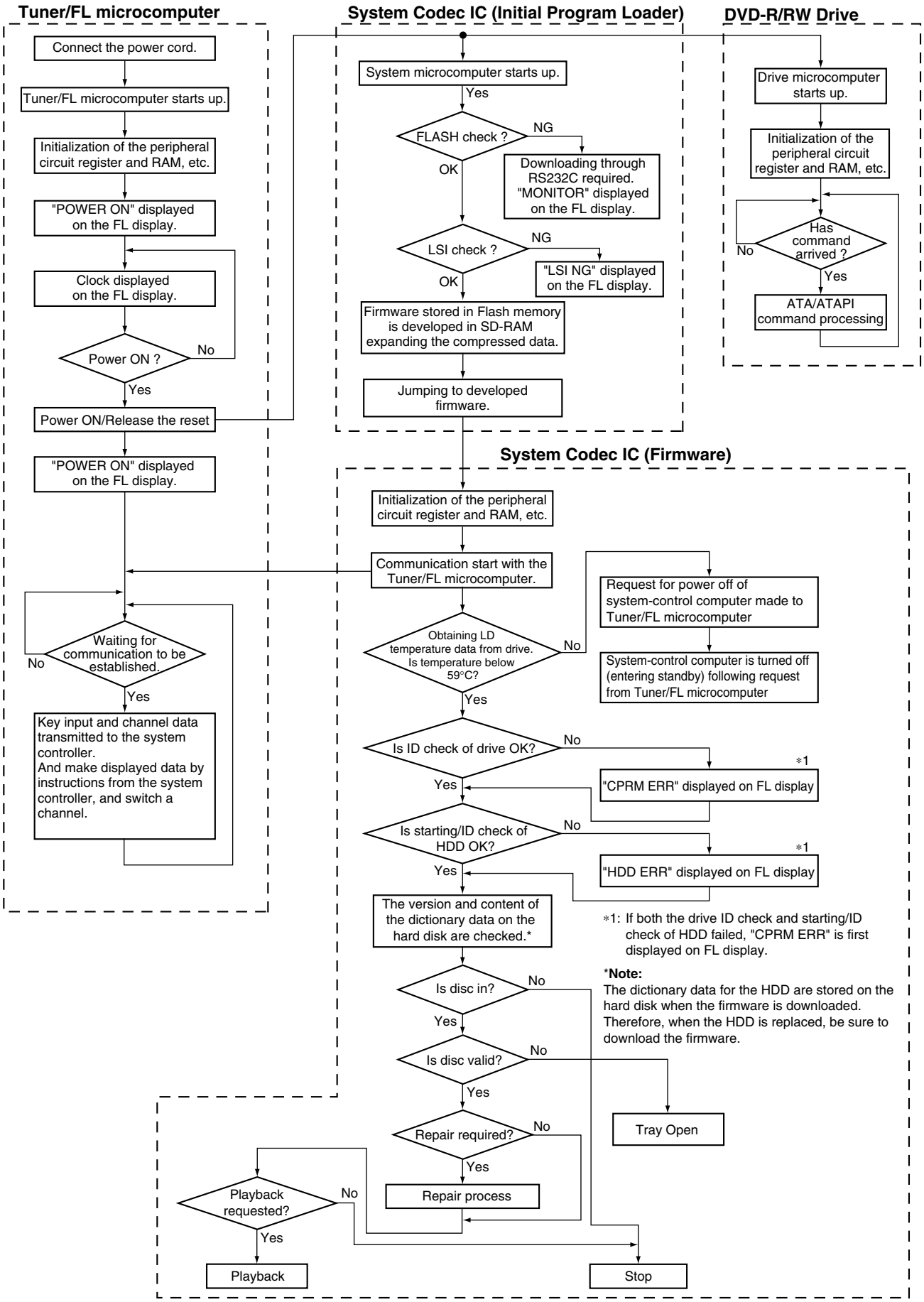


Detailed description on each item on the screen
- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 11 hours/160 GB

Diagnosis results
- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

7.1.10 SETUP SEQUENCE



7.1.11 DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.
Note 3: For performing the diagnosis shown below, the following jigs for service is required:
- Emergency disc ejection rod (GGF1529)
- Flexible cable for service (GGD1170), (VKP2291), (GGD1437)
- Extension board (GGF1532 (A)), (GGF1532 (B))

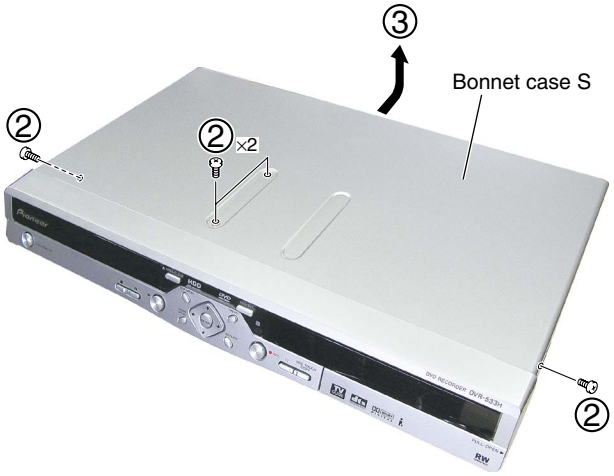
Diagnosis of MAIN Assy

1 Bonnet Case S

① Remove the four screws.

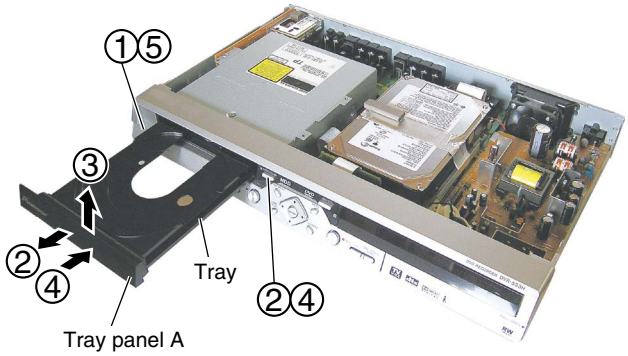
● Rear view

② Remove the four screws.
③ Remove the bonnet case S.



2 Tray Panel A

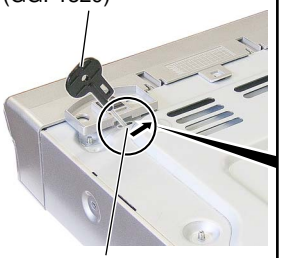
① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel A.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



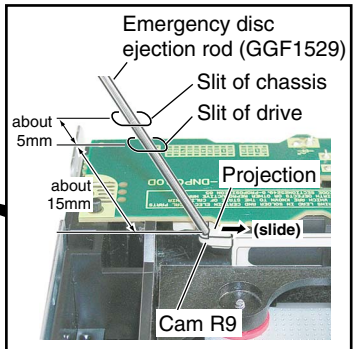
● **How to open the tray when the power cannot be turned on**

When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)
Insert the rod through the slit at the bottom of the unit and slide the projection for cam R9 in the direction of the arrow, using the rod. When the tray is popped out a little, pull it out by hand. Find the projection by inserting the rod through the slit by about 20 mm, as the projection is not visible from the outside. If the insertion of the rod exceeds 20 mm, you cannot catch the projection.

Emergency disc ejection rod (GGF1529)



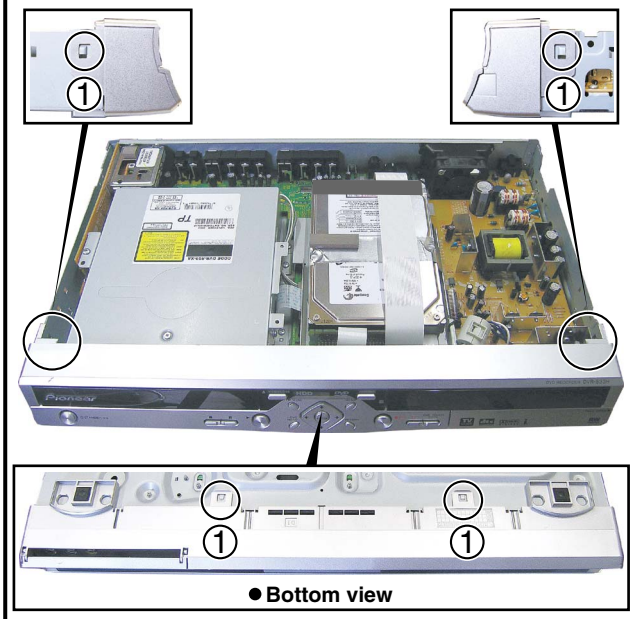
● Bottom view



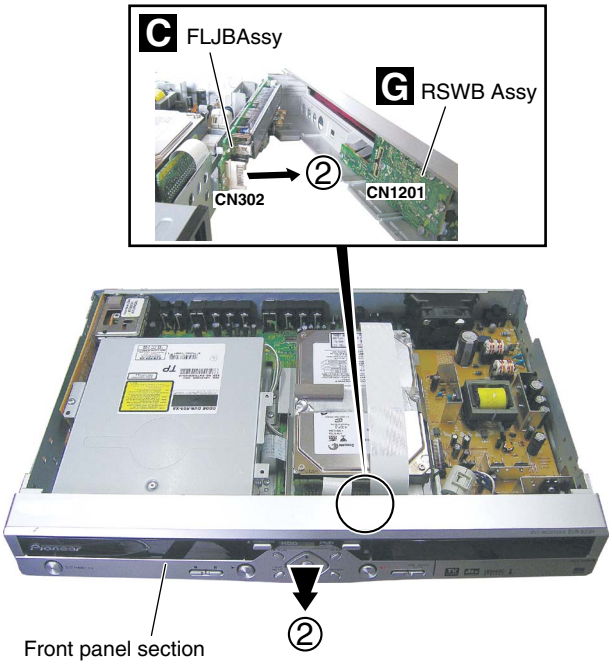
● Bottom view

3 Front Panel Section

① Unhook the four hooks.



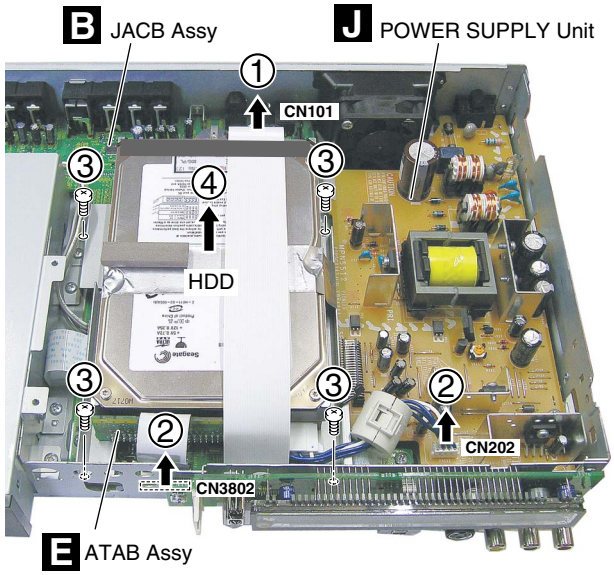
② Remove the front panel section while disconnect the connector.



4 HDD and DRIVE Assy R9R

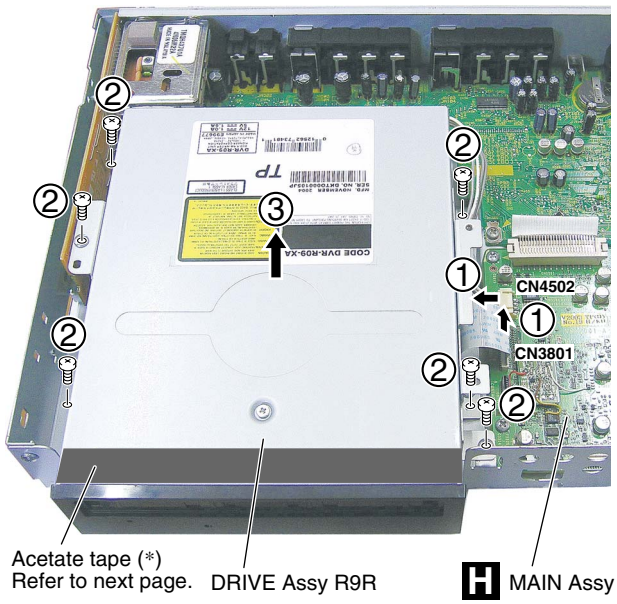
• HDD

① Disconnect the connector and tape.
② Disconnect the flexible cable and connectors.
③ Remove the four screws.
④ Remove the HDD.



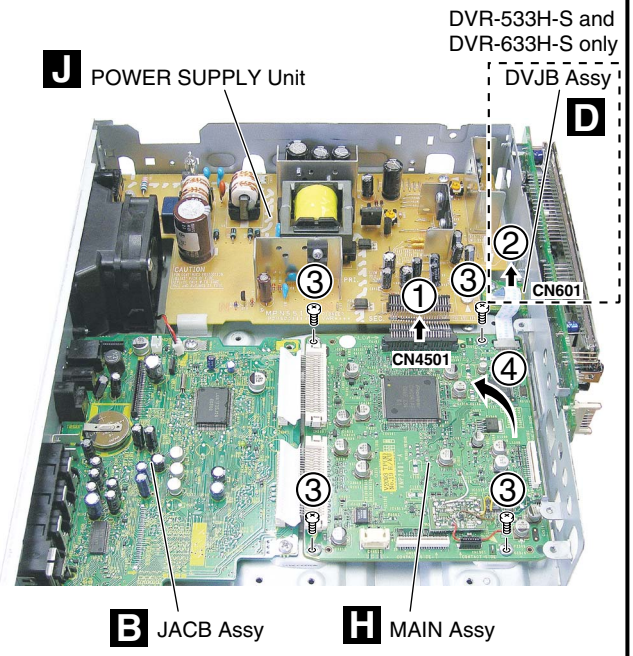
• DRIVE Assy R9R

① Disconnect the flexible cable and connectors.
② Remove the six screws.
③ Remove the DRIVE Assy R9R.



5 MAIN Assy

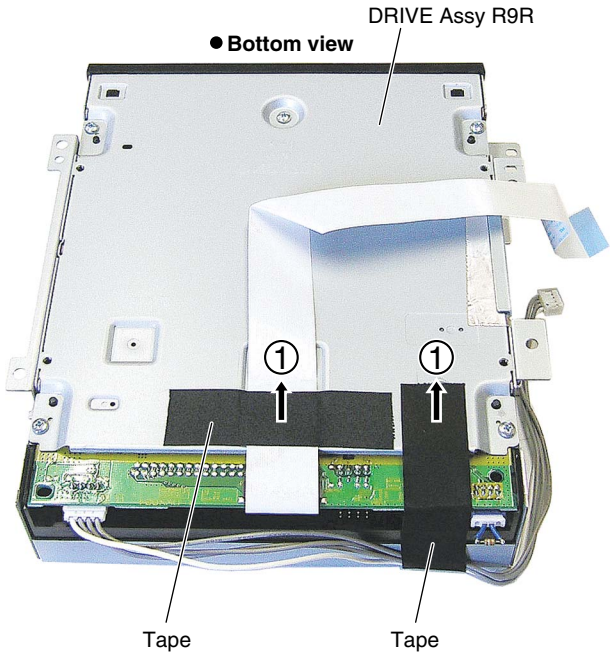
① Disconnect the connector.
② Disconnect the flexible cable.
(DVR-533H-S and DVR-633H-S only)
③ Remove the four screws.
④ Stand the MAIN Assy.



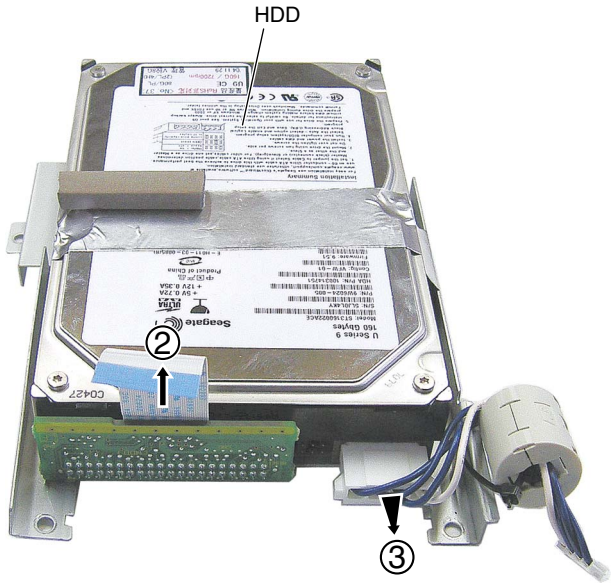
Note:
Acetate tape (*) (former page)
When replacing the DRIVE Assy, remove the acetate tape from the old assy and adhere it to the new assy. Without the acetate tape, the performance of the drive cannot be assured.
If the tape cannot be reused, be sure to use acetate tape for service (GYH1001).

6 Diagnosis

① Remove the two tapes.

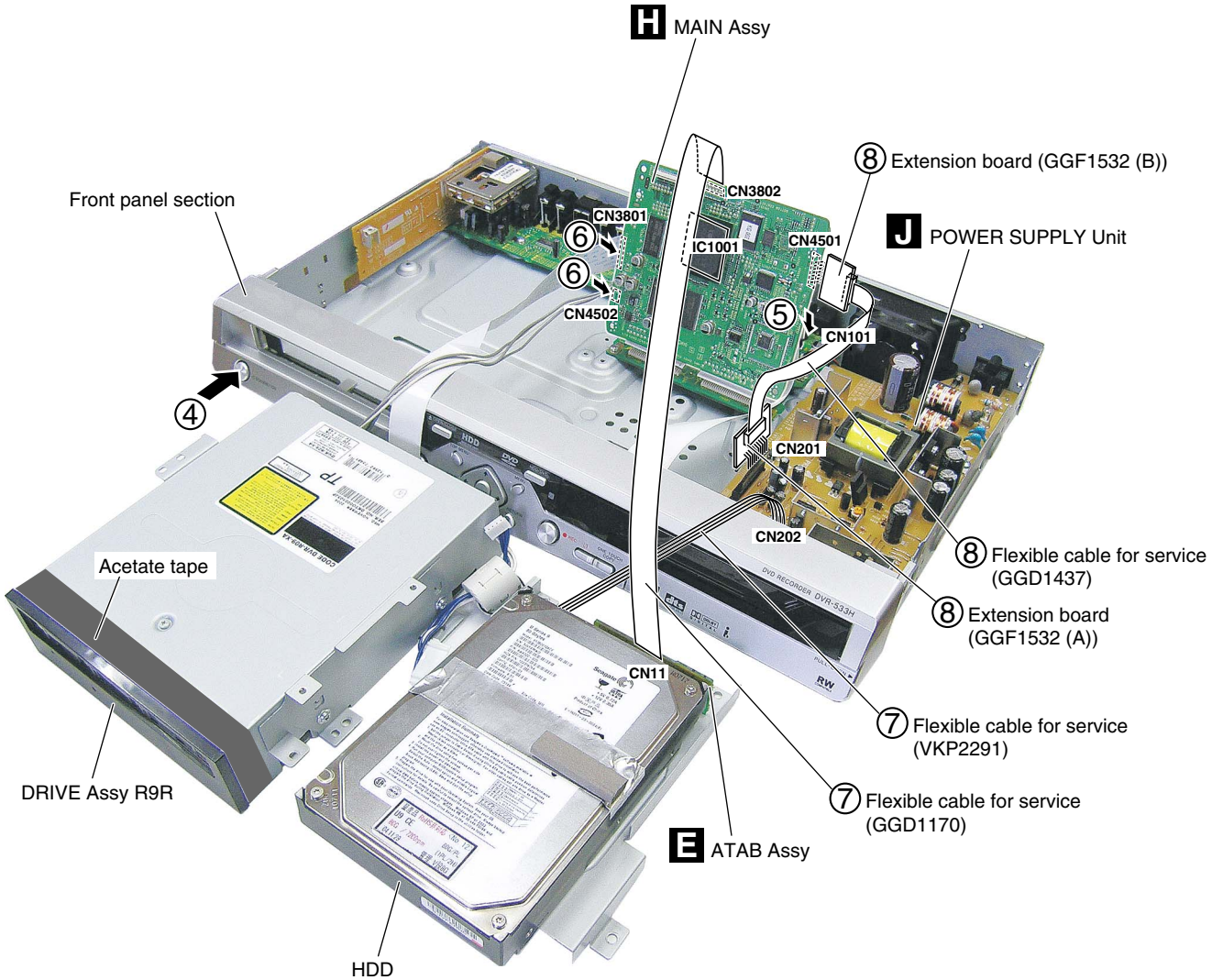


② Disconnect the flexible cable.
③ Disconnect the connector.



④ Reassembling the front panel section.
⑤ Connect the flexible cable.
⑥ Connect the connector and flexible cables from the DRIVE Assy R9R.
⑦ Connect the two flexible cables for service from the HDD.
⑧ Connect the two extension boards and flexible cable for service.
⑨ Arrange the unit as shown in the photo below.

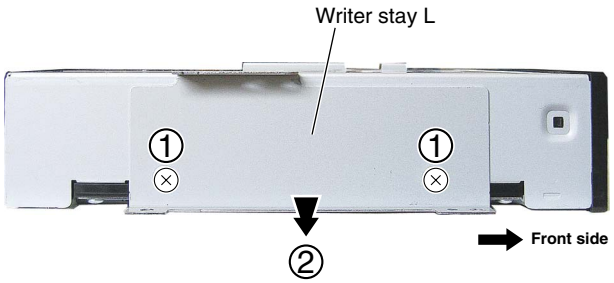
Caution :
Main IC (IC1001) on the MAIN Assy will be heated to arround 80 degrees celsius.
Be careful when works.



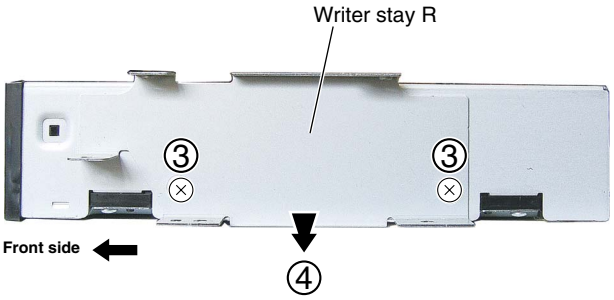
Diagnosis

Cleanning the Pickup Lens

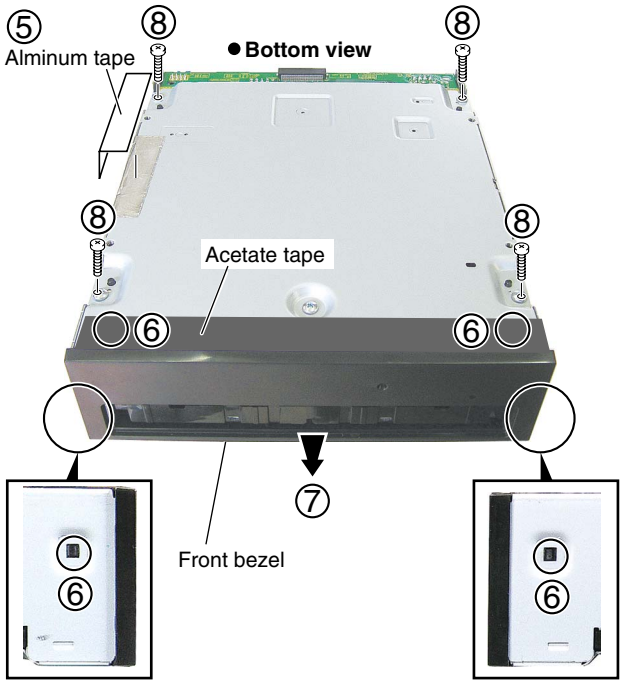
① Remove the two screws.
② Remove the writer stay L.



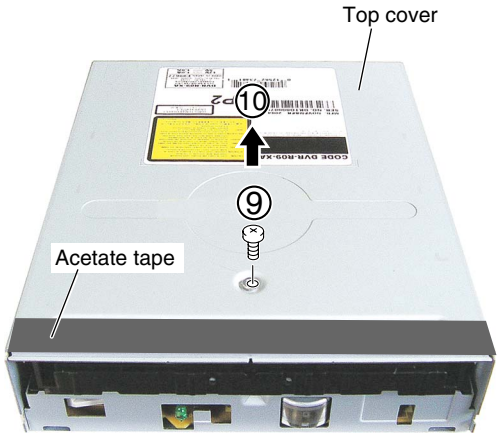
③ Remove the two screws.
④ Remove the writer stay R.



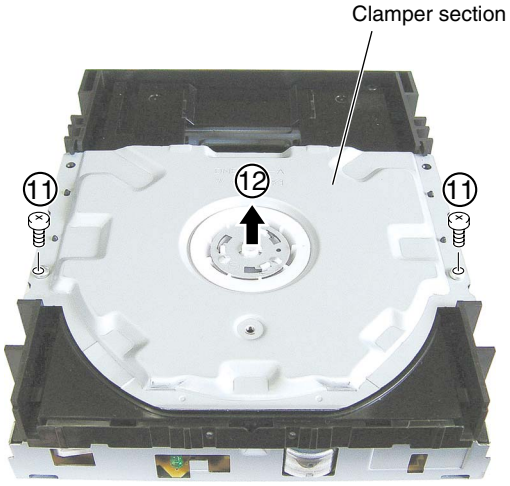
⑤ Remove the alminum tape.
⑥ Unhook the four hooks.
⑦ Remove the front bezel.
⑧ Remove the four screws.



⑨ Remove the one screw.
⑩ Remove the top cover.



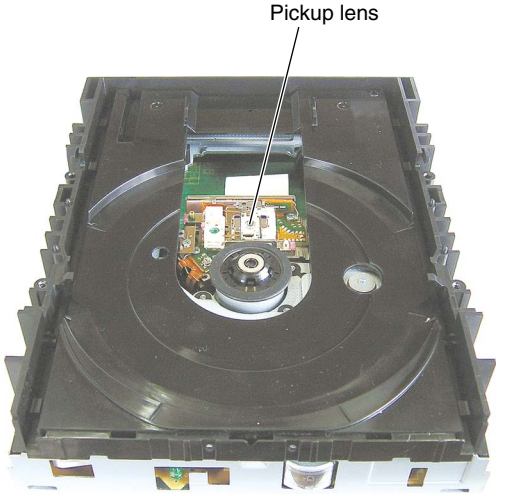
⑪ Remove the two screws.
⑫ Remove the clamper section.



⑬ Clean the pickup lens.

Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● **List of IC**

PMC002A8, CM0041BF, R8A34011BG-K, BU4828F, R1170S331B, PQ035ZN01ZPH, NJM2861F33, BA25F18WHFP, BD3823FV, LA73031V

■ PMC002A8 (JCKB ASSY : IC101)

• TUNER Microcomputer

● **Pin Function**

No.	Pin Name	Signal Name	I/O	Function	Active
1	PA3/S08	FLDATA	O	Communication line with FL Driver	
2	PA4/SI8/SB8	FLSTB	O	Ccommunication strobe line with FL Driver	
3	PA5/SCK8	FLCLK	O	Communication clock with FL Driver	
4	P70/INTO/TOCLP	WDT	I	WDT for detection of u-com in the state of out of control	
5	P71/INT1/TOHCP	ACDET	I	Detection of AC power	
6	P72/INT2/TOIN/TOLCP	HS_MTMOT	I	Handshaking of system control u-com communication	
7	P73/INT3/TOIN/TOHCP	IR	I	Pulse input of remote control	
8	RES#	XRESET	I	Reset input	
9	XT1	XT1	I	Connection of sub clock	
10	XT2	XT2	O	Connection of sub clock	
11	VSS1	GND	–		
12	CF1	CF1	I	Connection of main clock	
13	CF2	CF2	O	Connection of main clock	
14	VDD1	VDD1	–		
15	P80/AN0	MODEL1	Analog In	Input #1 for model type judgement	
16	P81/AN1	MODEL2	Analog In	Input #1 for model type judgement	
17	P82/AN2	KEY1	Analog In	Main unit key input #1	
18	P83/AN3	KEY2	Analog In	Main unit key input #2	
19	P84/AN4	KEY3	Analog In	Main unit key input #3	
20	P85/AN5	AGC	Analog In	AGC voltage input from tuner	
21	P86/AN6	BATTERY	Analog In	Input for battery voltage checking	
22	P87/AN7	FUNC	Analog In		
23	P10/SO0	SDET3	I	Detection of S tereminal #3 connection	
24	P11/SI0/SB0	SDET2	I	Detection of S tereminal #2 connection	
25	P12/SCK0	SDET1	I	Detection of S tereminal #1 connection	
26	P13/SO1	AVLOUT	O	Input for battery voltage checking	
27	P14/SI1/SB1	SDA	Nch O/D	I2C communication (data)	
28	P15/SCK1	SCL	Nch O/D	I2C communication (clock)	
29	P16/T1PWML	XSYSRST	O	IC reset signal of whole system	
30	P17/T1PWMH/BUZ	XVDECRST	O	Reset signal to VDEC2	
31	PE0/AN12	MUTEV	O	CVBS, Y/C mute signal for video driver IC	
32	PE1/AN13	COMPMUTE	O	Y/Cb/Cr mute signal for video driver IC	
33	PE2/AN14	AMUTE1	O	Audio mute signal of ouput stage	
34	PE3/AN15	INSEL1	O	Input selection of video selector	
35	PE4	INSEL2	O	Input selection of video selector	
36	PE5	INSEL3	O	Input selection of video selector	
37	PE6	YCSEL	O	CVBS or Y/C selection of video selector	
38	PE7	STBYVS	O	Standby mode selection of video selector	
39	VSS4	GND	–		
40	VDD4	VDD4	–		

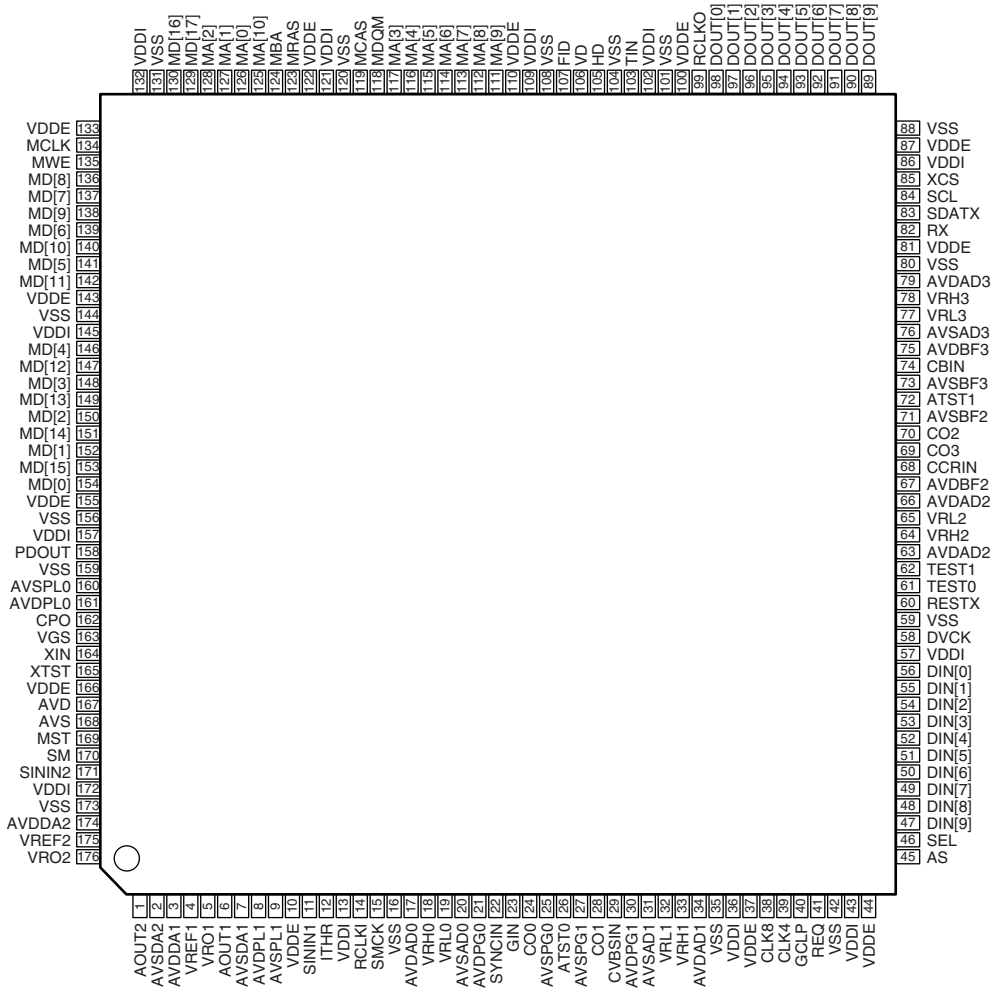
No.	Pin Name	Signal Name	I/O	Function	Active
41	PF0	LET	O	Letter-box output superimposed signal	
42	PF1	SQU	O	Squeese output superimposed signal	
43	PF2	RGBSEL	O	Input RGB selection	
44	PF3	XTUMODE	O		
45	PF4	S1	O	S1/S2 selection signal	
46	PF5	XLPTHRU	O		
47	PF6	PSMUTE	O		
48	PF7	XAVLTH	O	Through selection of AV.Link communication line	
49	SI2P0/SO2	NC	O		
50	SI2P1/SI2/SB2	NC	O		
51	SI2P2/SCK2	NC	O		
52	SI2P3/SCK2O	RFTHRU	O	RF through selection of tuner	
53	PWM1	NC	O		
54	PWM0	FANCTRL	O	Rotaion speed control of radiating fan	
55	VDD2	VDD2	–		
56	VSS2	GND	–		
57	PO0	P_CONT2	O		
58	PO1	MUTECTL	O		
59	PO2	EPGEXT	O	Equaliser selection of slicer input video	
60	PO3	TUON	O	Power control for tuner section	
61	PO4	SWVION	O	Power control for tvideo section	
62	PO5/CKO	P_CONT	O	Power control for whole system	
63	PO6/T6O	FLON	O	Power control for FL tube	
64	PO7/T7O	XP_SAVE	O		
65	P20/INT4/T1IN/TOCLP/TOHCP/INT6	STATCHG	I	Detection of audio multi-plex status change of MSP	
66	P21/INT4/T1IN/TOCLP/TOHCP	J_CLOCK	I	Input audio for Just Clock	
67	P22/INT4/T1IN/TOCLP/TOHCP/HCTR	CSYNCIN	I	C-sync for Auto-Rec	
68	P23/INT4/T1IN/TOCLP/TOHCP	XCHECKER	I	Detection of attaching the unit checker	
69	P24/INT5/T1IN/TOCLP/TOHCP/INT7	MRST	I	Detection of abnormality of Main Board power	
70	P25/INT5/T1IN/TOCLP/TOHCP	AVLIN	I	Input line of NexTViewLink	
71	P26/INT5/T1IN/TOCLP/TOHCP	NC	O		
72	P27/INT5/T1IN/TOCLP/TOHCP	BLANKIN	I		
73	P30/PWM4	LEDDVD	O	DVD indicator	
74	P31/PWM5	LEDHDD	O	HDD indicator	
75	P32/UTX1	TXD1	O	Transmission for RS232-C terminal	
76	P33/URX1	RXD1	I	Reception for RS232-C terminal	
77	P34/UTX2	TXD2	O	Reservation	
78	P35/URX2	RXD2	I	Reservation	
79	P36	HS_TTOM	O	Handshaking of sys con SYS → Tuner	
80	VDDODA	VDDODA	–		

No.	Pin Name	Signal Name	I/O	Function	Active
81	PB6/CVD/CSYNC	CVBSIN	I	Input video for data slicer	
82	VSSVCO	GND	–		
83	PB4/FILTSLC	FILTSLC	I	External filter for slicer PLL	
84	VDDVCO	VDDVCO	–		
85	PB2	NC	O		
86	PB1	NC	O		
87	PB0/DS1FLD	NC	O		
88	VSS3	GND	–		
89	VDD3	VDD3	–		
90	PC7/DBGP2	DBGP2	Nch O/D	Control port for on-chip debugger	
91	PC6/DBGP1	DBGP1	Nch O/D	Control port for on-chip debugger	
92	PC5/DBGP0	DBGP0	Nch O/D	Control port for on-chip debugger	
93	PC4/AN10	NC	O		
94	PC3/AN11	NC	O		
95	PC2/AN9	NC	O		
96	PC1/AN8	NC	O		
97	PC0/OCSYNC	NC	O		
98	PA0/SO7	SD_TTOM	O	Communication data line of sys con Tuner → Sys	
99	PA1/SI7/SB7	SD_MTOT	I	Communication data line of sys con Sys → Tuner	
100	PA2/SCK7	SCK_MTOT	I	Communication clock of sys con Sys → Tuner	

■ CM0041BF (MAIN ASSY: IC4201)

• Video Decoder

● Pin Arrangement (Top view)



● Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	AOUT2	O	DAC2 analog signal output	9	AVSPL1	P	PLL1 GND
2	AVSDA2	P	DAC2 GND	10	VDDE	P	I/O power supply 1
3	AVDDA1	P	DAC1 power supply	11	SININ1	I	PLL1 reference input
4	VREF1	I	DAC1 reference voltage input	12	ITHR	I	Penetration current test pin
5	VRO1	O	DAC1 inward current setting pin	13	VDDI	P	CORE power supply 1
6	AOUT1	O	DAC1 analog signal output	14	RCLKI	I	Resampling clock input
7	AVSDA1	P	DAC1 GND	15	SMCK	I	SCAN test pin
8	AVDPL1	P	PLL1 power supply	16	VSS	P	Digital GND 1

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
17	AVDAD0	P	ADC0 power supply	57	VDDI	P	CORE power supply 4
18	VRH0	I	ADC0 top reference electric potential	58	DVCK	I	DVIF clock input
19	VRL0	I	ADC0 bottom reference electric potential	59	VSS	P	Digital GND4
20	AVSAD0	P	ADC0 GND	60	RESETX	I	System reset input
21	AVDPG0	P	PGA0, CLP0, OFFC power supply	61	TEST0	I	Test mode setting 0
22	SYNCIN	I	ADC0 analog input	62	TEST1	I	Test mode setting 1
23	GIN	I	ADC0 analog input	63	AVDAD2	P	ADC2 power supply
24	CO0	O	PGA0 capacitor connection pin (REF0-synctip)	64	VRH2	I	ADC2 top reference electric potential
25	AVSPG0	P	PGA0, CLP0, OFFC GND	65	VRL2	I	ADC2 bottom reference electric potential
26	ATST0	I	Analog test pin	66	AVSAD2	P	ADC2 GND
27	AVSPG1	P	PGA1, CLP1, OFFC GND	67	AVDBF2	P	BUF2.CLP2 power supply
28	CO1	O	PGA1 capacitor connection pin (REF1-synctip)	68	CCRIN	I	ADC2 analog input
29	CVBSIN	I	ADC1 analog input	69	CO3	O	PGA3 capacitor connection pin
30	AVDPG1	P	PGA1, CLP1, OFFC power supply	70	CO2	O	BUF2 capacitor connection pin
31	AVSAD1	P	ADC1 GND	71	AVSBF2	P	BUF2, CLP2 GND
32	VRL1	I	ADC1 bottom reference electric potential	72	ATST1	I	Analog test pin
33	VRH1	I	ADC1 top reference electric potential	73	AVSBF3	P	BUF3, BUFF GND
34	AVDAD1	P	ADC1 power supply	74	CBIN	I	ADC3 analog input
35	VSS	P	Digital GND2	75	AVDBF3	P	BUF3.BUFF power supply
36	VDDI	P	CORE power supply 2	76	AVSAD3	P	ADC3 GND
37	VDDE	P	I/O power supply 2	77	VRL3	I	ADC3 bottom reference electric potential
38	CLK8	O	8fsc clock output for GCR	78	VRH3	I	ADC3 top reference electric potential
39	CLK4	O	4fsc clock output for GCR	79	AVDAD3	P	ADC3 power supply
40	GCLP	I/O	Clamp pulse output for GCR/FB input	80	VSS	P	Digital GND5
41	REQ	O	Interrupt signal output	81	VDDE	P	I/O power supply 4
42	VSS	P	Digital GND3	82	RX	O	--
43	VDDI	P	CORE power supply 3	83	SDATX	I/O	Data for serial communication (I2C: SDA)
44	VDDE	P	I/O power supply 3	84	SCL	I	Clock for serial communication (I2C: SCL)
45	AS	I	Address select input	85	XCS	I	--
46	SEL	I	Serial communication mode setting	86	VDDI	P	CORE power supply 5
47	DIN[9]	I	Digital data input (MSB)	87	VDDE	P	I/O power supply 5
48	DIN[8]	I	Digital data input	88	VSS	P	Digital GND6
49	DIN[7]	I	Digital data input	89	DOUT[9]	O	Digital data output (MSB)
50	DIN[6]	I	Digital data input	90	DOUT[8]	O	Digital data output
51	DIN[5]	I	Digital data input	91	DOUT[7]	O	Digital data output
52	DIN[4]	I	Digital data input	92	DOUT[6]	O	Digital data output
53	DIN[3]	I	Digital data input	93	DOUT[5]	O	Digital data output
54	DIN[2]	I	Digital data input	94	DOUT[4]	O	Digital data output
55	DIN[1]	I	Digital data input	95	DOUT[3]	O	Digital data output
56	DIN[0]	I	Digital data input (LSB)	96	DOUT[2]	O	Digital data output

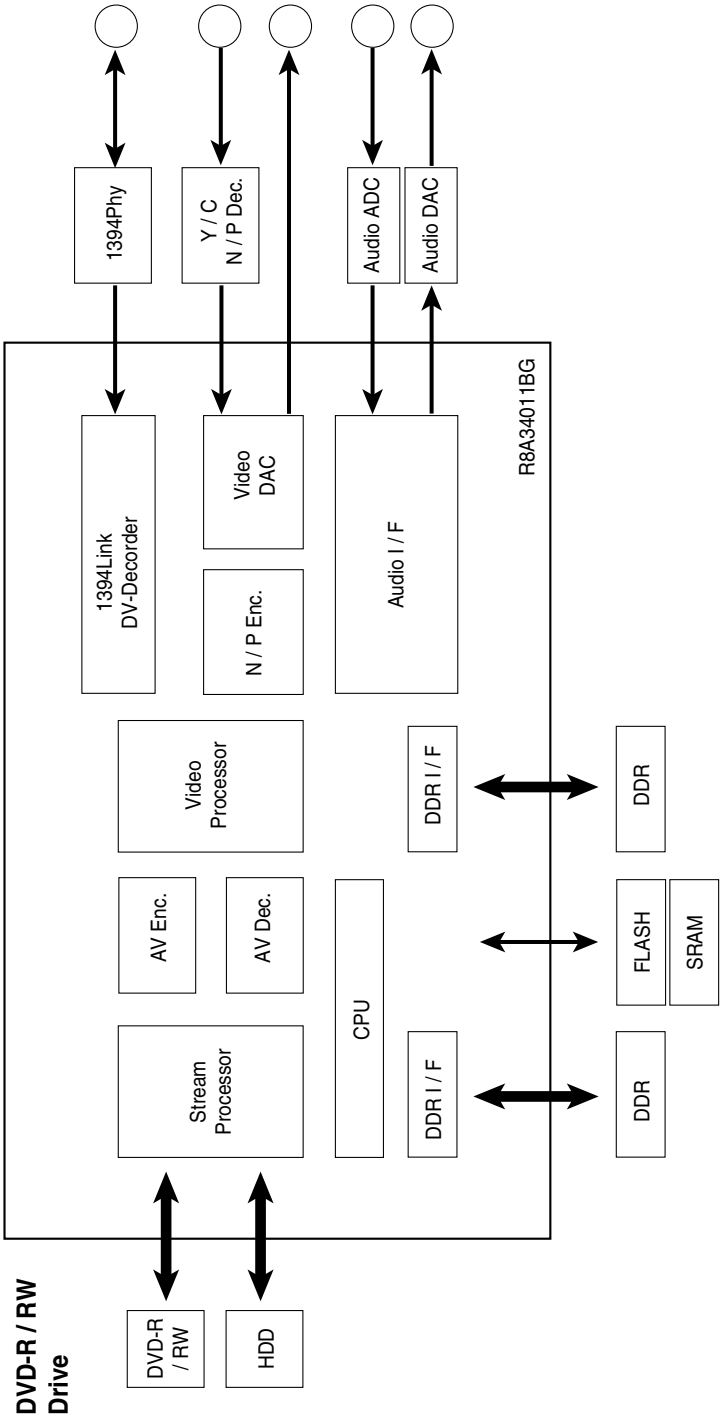
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
97	DOUT[1]	O	Digital data output	137	MD[7]	I/O	SDRAM data bus
98	DOUT[0]	O	Digital data output (LSB)	138	MD[9]	I/O	SDRAM data bus
99	RCLKO	O	Resampling clock output	139	MD[6]	I/O	SDRAM data bus
100	VDDE	P	I/O power supply 6	140	MD[10]	I/O	SDRAM data bus
101	VSS	P	Digital GND7	141	MD[5]	I/O	SDRAM data bus
102	VDDI	P	CORE power supply 6	142	MD[11]	I/O	SDRAM data bus
103	TIN	I	Control input of data output timing	143	VDDE	P	I/O power supply 10
104	VSS	P	Digital GND8	144	VSS	P	Digital GND12
105	HD	O	H drive output	145	VDDI	P	CORE power supply 10
106	VD	I/O	V drive output (MD[19])	146	MD[4]	I/O	SDRAM data bus
107	FID	I/O	Field ID output (MD[18])	147	MD[12]	I/O	SDRAM data bus
108	VSS	P	Digital GND9	148	MD[3]	I/O	SDRAM data bus
109	VDDI	P	CORE power supply 7	149	MD[13]	I/O	SDRAM data bus
110	VDDE	P	I/O power supply 7	150	MD[2]	I/O	SDRAM data bus
111	MA[9]	O	SDRAM address output	151	MD[14]	I/O	SDRAM data bus
112	MA[8]	O	SDRAM address output	152	MD[1]	I/O	SDRAM data bus
113	MA[7]	O	SDRAM address output	153	MD[15]	I/O	SDRAM data bus (MSB)
114	MA[6]	O	SDRAM address output	154	MD[0]	I/O	SDRAM data bus (LSB)
115	MA[5]	O	SDRAM address output	155	VDDE	P	I/O power supply 11
116	MA[4]	O	SDRAM address output	156	VSS	P	Digital GND13
117	MA[3]	O	SDRAM address output	157	VDDI	P	CORE power supply 11
118	MDQM	O	SDRAM DQM output	158	PDOUT	O	Phase comparison output
119	MCAS	O	SDRAM CAS output	159	VSS	P	Digital GND14
120	VSS	P	Digital GND10	160	AVSPL0	P	PLL0 GND
121	VDDI	P	CORE power supply 8	161	AVDPL0	P	PLL0 power supply
122	VDDE	P	I/O power supply 8	162	CPO	O	PLL0 Charge Pump output
123	MRAS	O	SDRAM RAS output	163	VGS	I	GND for PLL0 guard band
124	MBA	O	SDRAM bank address output	164	XIN	I	27MHz clock input
125	MA[10]	O	SDRAM address output (MSB)	165	XTST	I	SCAN test pin
126	MA[0]	O	SDRAM address output (LSB)	166	VDDE	P	I/O power supply 12
127	MA[1]	O	SDRAM address output	167	AVD	P	PLL2 power supply
128	MA[2]	O	SDRAM address output	168	AVS	P	PLL2 GND
129	MD[17]	I/O	(SDRAM data bus)	169	MST	I	SCAN test pin
130	MD[16]	I/O	(SDRAM data bus)	170	SM	I	SCAN test pin
131	VSS	P	Digital GND11	171	SININ2	I	PLL2 reference input
132	VDDI	P	CORE power supply 9	172	VDDI	P	CORE power supply 12
133	VDDE	P	I/O power supply 9	173	VSS	P	Digital GND15
134	MCLK	O	SDRAM clock output	174	AVDDA2	P	DAC2 power supply
135	MWE	O	SDRAM WE output	175	VREF2	I	DAC2 reference voltage input
136	MD[8]	I/O	SDRAM data bus	176	VRO2	O	DAC2 inward current setting pin

■ R8A34011BG-K (MAIN ASSY : IC1001)

• System Codec

A

● Block Diagram



B

C

D

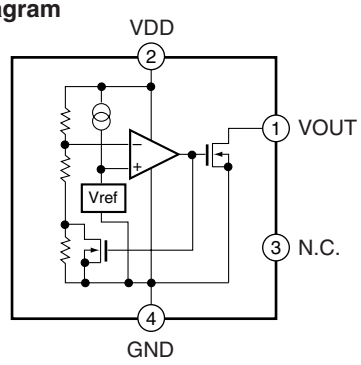
E

F

■ BU4828F (MAIN ASSY : IC3706)

• Reset IC

● **Block Diagram**



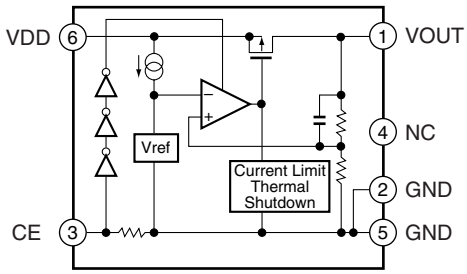
● **Pin Discription**

No.	Pin Name	I/O	Function
1	VOUT	O	Output Pin
2	VDD	I	Power Supply Input pin
3	N.C.	–	N.C.
4	GND	–	GND pin

■ R1170S331B (MAIN ASSY : IC4506)

• Regulator IC

● **Block Diagram**



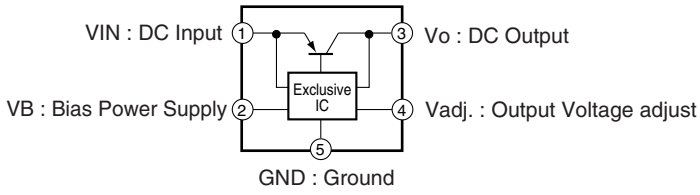
● **Pin Discription**

No.	Pin Name	I/O	Function
1	VOUT	O	VR Output Pin
2	GND	–	GND pin
3	CE.	O	Cjip Enable ("H" active)
4	N.C.	–	N.C.
5	GND	–	GND pin
6	VDD	I	Power Supply Input pin

■ PQ035ZN01ZPH (MAIN ASSY : IC4509)

• Regulator IC

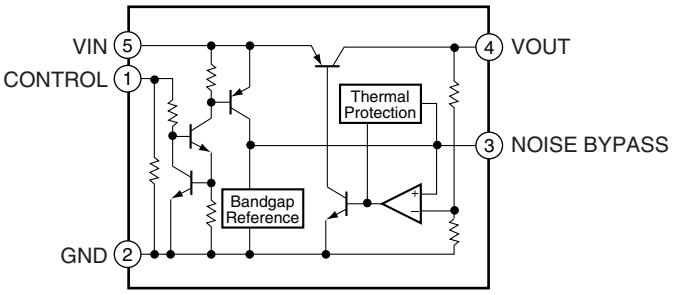
● **Block Diagram**



■ NJM2861F33 (MAIN ASSY : IC4512)

• Regulator IC

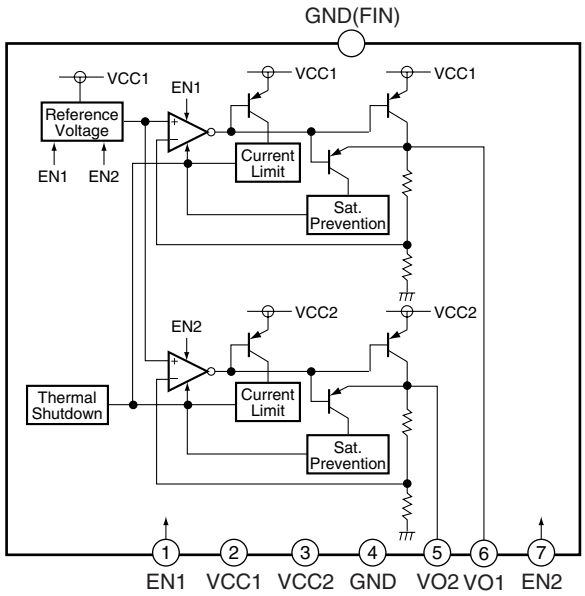
● **Block Diagram**



■ BA25F18WHFP (MAIN ASSY : IC4571)

• Dual Low-Dropout Voltage Regulator

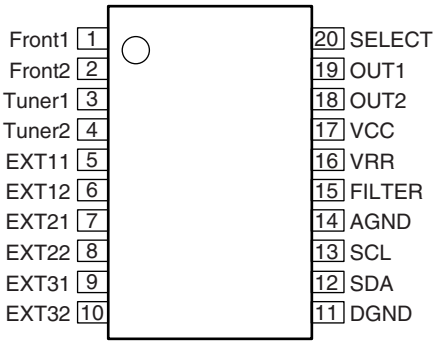
● **Block Diagram**



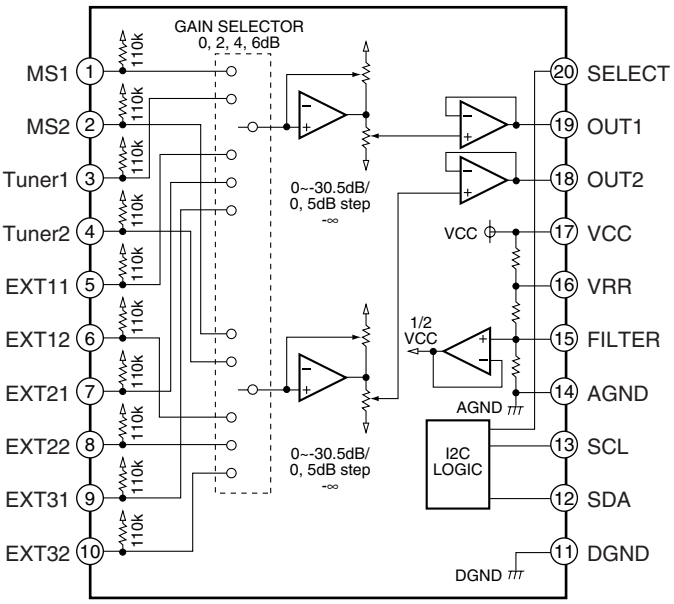
■ BD3823FV (JACB ASSY : IC103)

• Audio Sound Processor

● Pin Layout (Upper view)



● Block Diagram



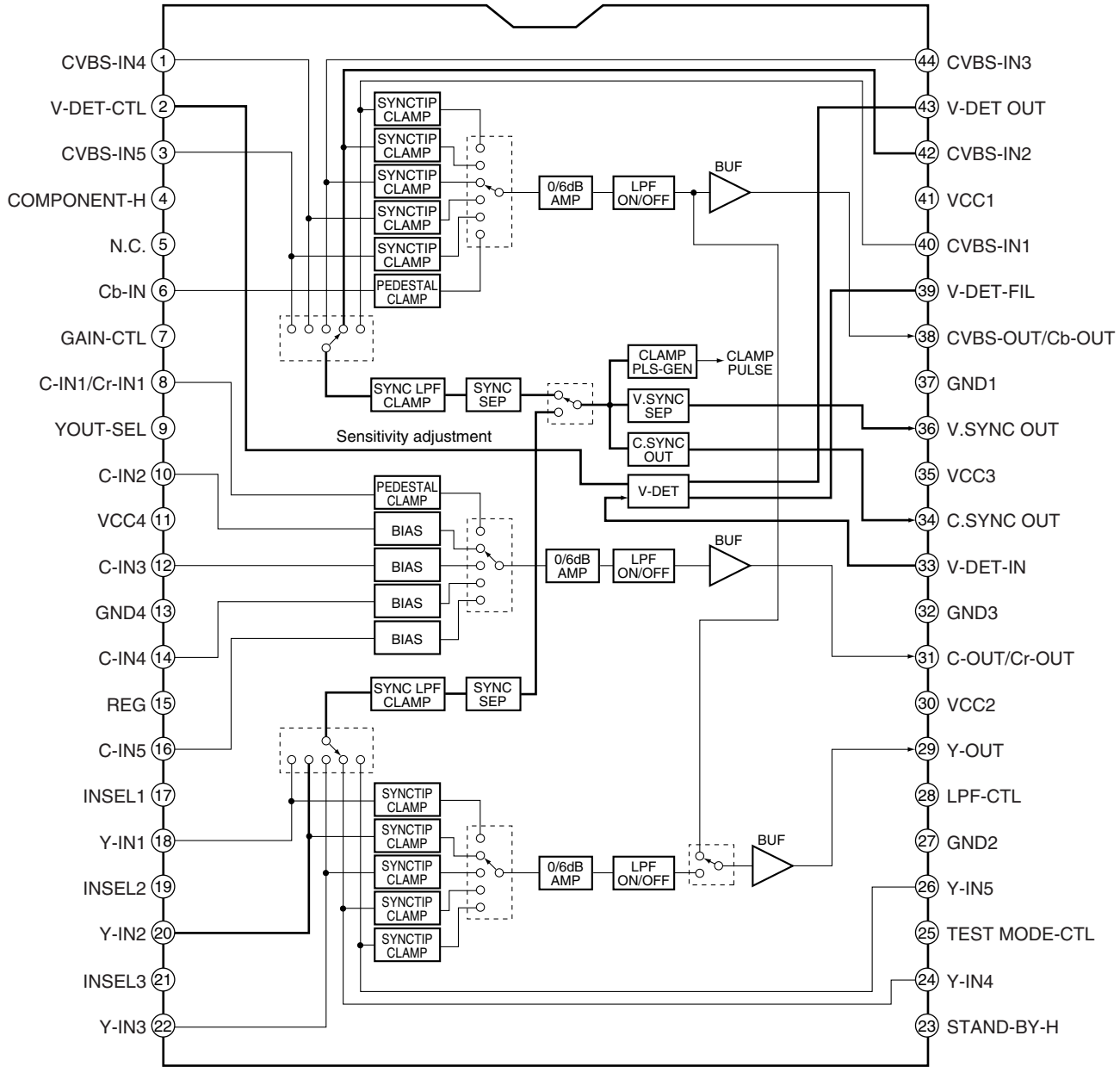
● Pin Discription

No.	Pin Name	I/O	Function
1	MS1	I	Music server input terminal
2	MS2	I	Music server input terminal
3	Tuner1	I	Tuner input terminal of ch1
4	Tuner2	I	Tuner input terminal of ch2
5	EXT11	I	External 1 input terminal of ch1
6	EXT12	I	External 1 input terminal of ch2
7	EXT21	I	External 2 input terminal of ch1
8	EXT22	I	External 2 input terminal of ch2
9	EXT31	I	External 3 input terminal of ch1
10	EXT32	I	External 3 input terminal of ch2
11	DGND	–	Ground terminal
12	SDA	I	I2C BUS data terminal
13	SCL	I	I2C BUS clock terminal
14	AGND	–	GND terminal
15	FILTER	I	1/2 VCC terminal
16	VRR	I	Ripple rejection filter terminal
17	VCC	–	Power supply terminal
18	OUT2	O	Volume output terminal of ch2
19	OUT1	O	Volume output terminal of ch1
20	SELECT	I	Slave address selection terminal

■ LA73031V (JACB ASSY : IC401)

• Video Input selector

● Block Diagram



The parts connected by wide lines operate even at standby mode.

7.3 CAUTIONS ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During nonoperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 15°C/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
  If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

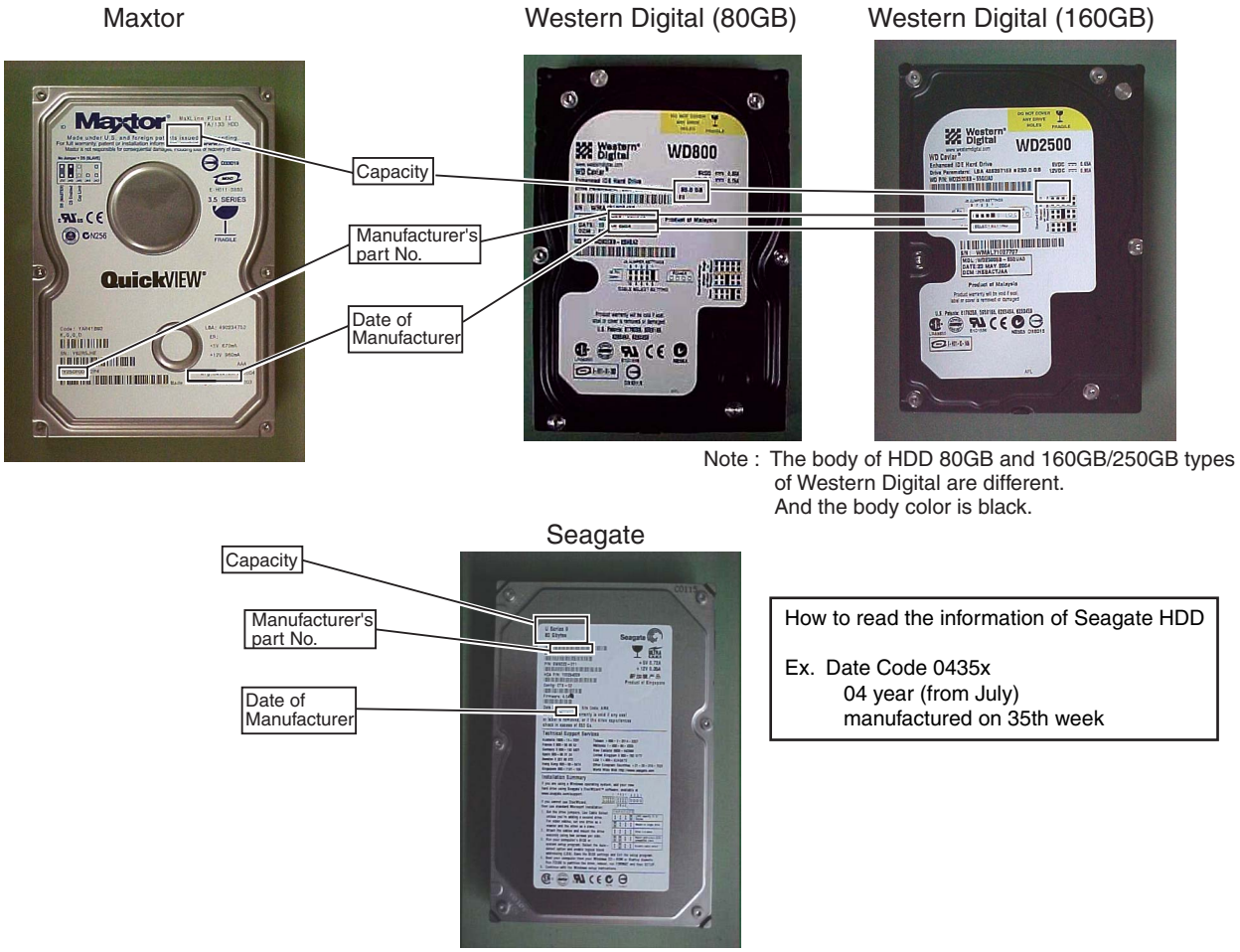
- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

Model Name	Capacity	Maxtor		Western Digital		Seagate	
		Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-531H-S DVR-533H-S	80GB	VXF1076	6L080P0	VXF1066	WD800BB -xxJKCx	VXF1036 VXF1084	ST38001ACE-
DVR-633H-S	160GB			VXF1047 VXF1068	WD1600BB-xxGUAx WD1600BB-xxGUCx	VXF1040 VXF1086	ST316002ACE-

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.



Note : The body of HDD 80GB and 160GB/250GB types of Western Digital are different. And the body color is black.

Fig.1 Location of the data on capacity and part No. of the HDD

■ Confirmation of the jumper pin location of the HDD

7.4 DISC/CONTENT FORMAT

Disc / content format playback compatibility

General disc compatibility

This recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable formatósee below for further compatibility information.

- Also compatible with KODAK Picture CD
- *is a trademark of DVD Format/Logo Licensing Corporation.*

  About DualDisc playback
- A DualDisc is a new two -sided disc, one side of which contains DVD content — video, audio, etc. — while the other side contains non-DVD content such as digital audio material.

  The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

  For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.
- *is a trademark of Fuji Photo Film Co. Ltd.*

DVD-R/RW compatibility

This recorder will play and record DVD-R/RW discs.

Compatible media:

- DVD-RW Ver. 1.1, Ver. 1.1 / 2x, Ver. 1.2 / 2—4x and Ver. 1.2 / 2—6x
- DVD-R Ver. 2.0 and Ver. 2.0 / 4x / 8x / 16x, and Ver. 2.1 / 1—8x / 1—16x

Recording formats:

- DVD-R/RW: Video Recording (VR) format and DVD-Video format (Video mode)

Readable formats:

- DVD-R/RW: Video Recording (VR) format and DVD-Video format (Video mode)

Note that older models of DVD recorders and DVD writers may reject DVD-RW Ver. 1.2 discs and/or corrupt the data on the disc. If you want to share DVD-RW discs between this recorder and an older recorder/writer, we recommend using Ver. 1.1 discs.

CD-R/RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD, ISO 9660 CD-ROM* containing MP3, WMA or JPEG files
  ** ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.*
- Multi-session playback: Yes (except CD-Audio and Video CD)
- Unfinalized disc playback: CD-Audio only

Compressed audio compatibility

- Compatible media: CD-ROM, CD-R, CD-RW
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 44.1 or 48kHz
- Bit-rates: Any (128Kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 *(files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)*
- DRM (Digital Rights Management) file playback: No (see also DRM in the *Glossary* on page 110)
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files — do not use for other file types)
- File structure: Up to 99 folders / 999 files (if these limits are exceeded, only files and folders up to these limits are playable)

WMA (Windows Media Audio) compatibility

The Windows Media® logo printed on the box indicates that this recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player for Windows® XP, Windows Media® Player 9 or Windows Media®Player 10 series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  **File format used by digital still cameras*
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 — 5120 pixels
- Vertical resolution: 120 — 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jif, .jfif (must be used for the recorder to recognize JPEG files — do not use for other file types)
- File structure: The recorder can load up to 99 folders / 999 files at one time *(if there are more files/folders that this on the disc then more can be reloaded)*

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

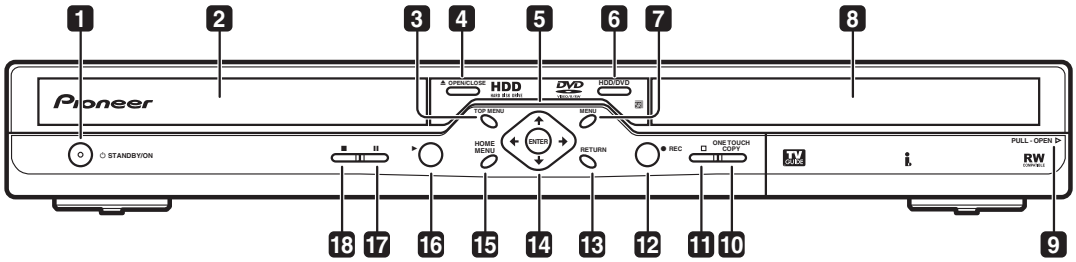
Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

8. PANEL FACILITIES

8.1 FRONT SECTION

Front panel



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 Disc tray

3 DISC NAVIGATOR/TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video disc is loaded.

4 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

5 HDD/DVD indicator
Lights blue when the HDD is selected; orange when DVD is selected.

6 HDD/DVD
Press to switch between the hard disk drive (HDD) and DVD for recording and playback.

7 MENU
Press to display a DVD-Video disc menu.

8 Front panel display and IR remote sensor

9 Front panel inputs
Pull the cover down where indicated to access the front panel input jacks (audio, video and DV[1]). Especially convenient for connecting camcorders and other portable equipment.

10 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD. See also the *Note on copying* on page 9.

11 □
Press to stop recording.

12 ● REC
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

13 RETURN
Press to go back one level in the on-screen menu or display.

14 ↑/↓/←/→ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

When stopped, the ↑/↓ buttons can also be used to change the TV channel.

15 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

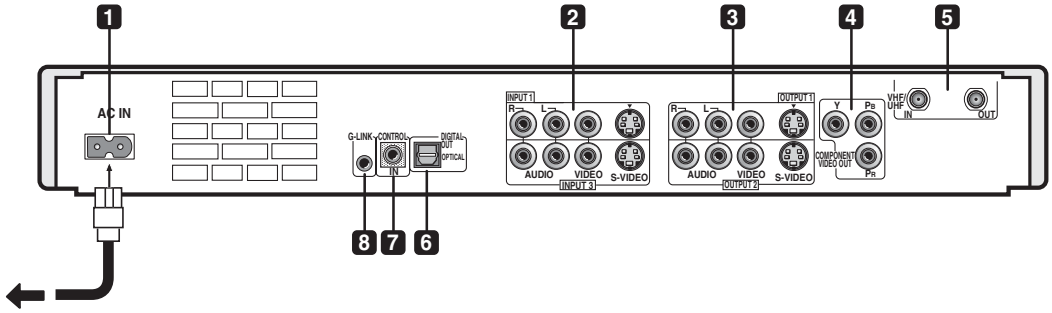
16 ►
Press to start or restart playback.

17 II
Press to pause or resume playback.

18 ■
Press to stop playback.

8.2 REAR PART

Rear panel connections



1 AC IN
After making all other connections, connect to a power outlet using the supplied power cable only.

2 Audio/video inputs 1 and 3
Two sets of audio/video inputs (stereo analog audio; composite and S-video video) that you can use to connect to satellite receivers, TVs, VCR or other source component for recording.

3 Audio/video outputs 1 and 2
Two sets of audio/video outputs (stereo analog audio; composite and S-video video) that you can use to connect TVs or monitors.

4 COMPONENT VIDEO OUT
A high-quality video output for connecting to a TV or monitor with a component video input.

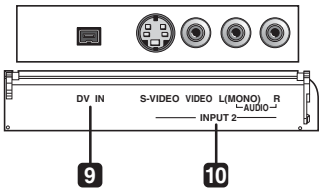
5 VHF/UHF IN (RF IN)/OUT
Connect your TV antenna to the **VHF/UHF IN (RF IN)** jack. The signal is passed through to the **VHF/UHF OUT** jack for connection to your TV.

6 OPTICAL DIGITAL OUT
A digital audio output for connecting to an AV amp/ receiver, Dolby Digital/DTS decoder or other equipment with optical digital input.

7 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

8 G-LINK™
Use to connect the supplied G-LINK™ cable for use with the TV Guide On Screen™ interactive program guide and a control-capable set-top box.

Front panel connections



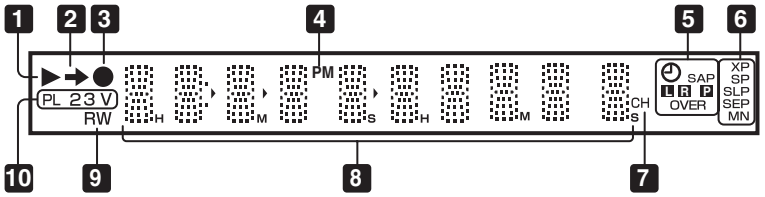
On the right side of the front panel a flip-down cover hides more connections.

9 DV IN *(DVR-633/533H-S only)*
A DV input i.LINK connector, suitable for connecting a DV camcorder.

10 Audio/video input 2
Audio/video input (stereo analog audio; composite and S-video video), especially suitable for camcorders, game consoles, portable audio, etc.

8.3 DISPLAY

Display



1 ►
Lights during playback; blinks when playback is paused.

2 →
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 PM
Lights to indicate PM (after midday) for the clock display.

5 ◴
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isnít a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

SAP
Lights when the currently selected TV channel has a Second Audio Program channel.

L R
Indicates which channels are recorded when Dual Mono is selected.

P
Lights when the component video output is set to progressive scan.

OVER
Lights when the analog audio input level is too high.

6 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP / SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super long play).

EP / SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

7 CH
Channel indicator for the built-in TV tuner.

8 Character display

9 R / RW
Indicates the type of recordable DVD loaded: DVD-R or DVD-RW.

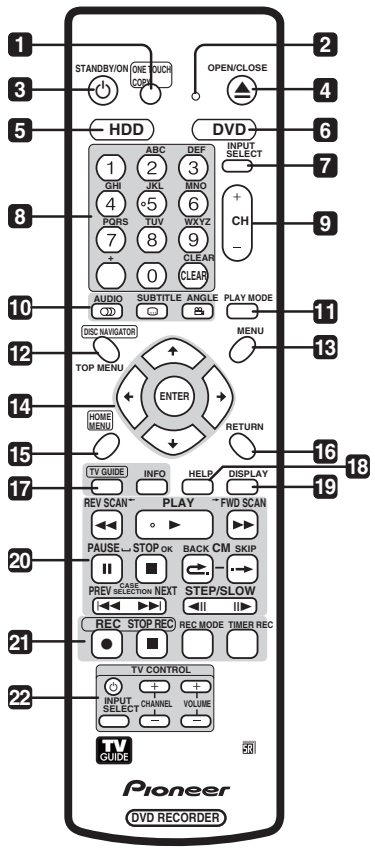
10 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

2 3
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

8.4 REMOTE CONTROL

Remote control



1 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD. See also the *Note on copying* on page 9.

2 Remote control indicator
Lights when setting up the remote control for use with a TV and when setting the remote control mode.

3 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

4 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

5 HDD
Press to select the hard disk (HDD) for recording or playback.

6 DVD
Press to select the DVD for recording or playback.

7 INPUT SELECT
Press to change the input to use for recording.

8 Alphanumeric buttons, + and CLEAR
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use the + button to enter non-alphanumeric characters and symbols.

Use **CLEAR** to clear an entry and start again.

9 CH +/–
Press to change the channel of the built-in TV tuner.

10 DVD playback functions

AUDIO
Changes the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Displays/changes the subtitles included in multilingual DVD-Video discs.

ANGLE
Switches camera angles on discs with multi-angle scenes.

11 PLAY MODE
Press to display the Play Mode menu (for features such as search, repeat and program play).

12 DISC NAVIGATOR/ TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video disc is loaded.

13 MENU
Press to display the disc menu if a DVD-Video disc is loaded. While in the TV Guide On Screen™ system, press to display the panel menu.

14 ↑/↓/←/→ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

15 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

16 RETURN
Press to go back one level in the on-screen menu or display. Also use to exit the TV Guide On Screen™ system.

17 TV Guide On Screen™ navigation

TV GUIDE
Press to access the TV Guide On Screen™ system; press again to exit.

INFO
Press to see additional information for the highlighted TV Guide On Screen™ item.

18 HELP
Press for help on how to use the current GUI screen.

19 DISPLAY
Displays/changes the on-screen information displays.

20 Playback controls

◄◄ REV SCAN / FWD SCAN ►►
Press to start reverse or forward scanning. Press again to change the speed.

► PLAY
Press to start playback.

II PAUSE
Press to pause playback or recording.

■ STOP
Press to stop playback.

CM BACK (commercial back)
Press repeatedly to skip progressively backward through the audio or video playing.

CM SKIP (commercial skip)
Press repeatedly to skip progressively forward through the audio or video playing.

I◄◄ PREV / NEXT ►►I
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

Also use to display the previous/next page of a TV Guide On Screen™ listing.

◄II STEP/SLOW II►
During playback, press to start slow-motion playback; while paused, press to show the previous or next video frame.

Also use to display the previous/next day of a TV Guide On Screen™ listing.

21 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins. With a program highlighted in the TV Guide On Screen™ system, press to set that program to record.

□ STOP REC
Press to stop recording.

REC MODE
Press repeatedly to change the recording mode (picture quality).

TIMER REC
Press to set a timer recording from the TV Guide On Screen™ system.

22 TV CONTROL
After setting up, use these controls to control your TV.

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc	GGV1239 (*)	diagnosis (ID data setting)
Flexible Cable (28P)	GGD1437	diagnosis of MAIN Assy
ATA cable	GGD1170	Extension of HDD
4P Power Cable	VKP2291	Extension of HDD
Extension Board (A)(B)	GGF1532	diagnosis of MAIN Assy
Emergency Disc Ejection Rod	GGF1529	Forced ejection of the Disc
Acetate Tape	GYH1001	Performance keeping of DRIVE Assy

(*) GGV 1239 wii be available on June 2005.
For servicing until June 2005, use GGV1179 disc.

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008